

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 03.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9FZ300R433-12
Type number : 0 460 494 347
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 1,9 L UD A3

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 4.30...4.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 5.40...6.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 50.00...51.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 450
Del. quantity cm3/
1000S.: 37.20...43.20

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 16.00...18.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 7.00...8.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2600
Charge press hPa: 750
Del. quantity cm3/
1000S.: 9.00...13.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 37.00...43.00
mind 1000S.: 37.0

Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1250
 Inj.-qty. cm3/
 difference 1000S.: -7.0...-11.0 #
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1250
 TD-travel
 difference mm: -1.9...-2.1 #
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
 Charge press hPa: 750
 TD travel mm: 8.00...8.60
 mm: (7.50...9.10)

Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 1250
 Charge press hPa: 750
 TD travel mm: 4.30...4.50
 mm: (3.60...5.20)

Shutoff
 electromagnet Volt: 12

4th speed 1/min: 750
 Charge press hPa: 750
 TD travel mm: 1.50...2.10
 mm: (1.00...2.60)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 4.30...4.90
 Shutoff
 electromagnet Volt: 12

2nd speed 1/min: 1250
 Charge press. hPa: 750
 Supply-pump
 pressure bar: 5.40...6.00
 Shutoff
 electromagnet Volt: 12

3rd speed 1/min: 2100
 Charge press. hPa: 750

Supply-pump
 pressure bar: 7.40...8.00
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.30)

2nd speed 1/min: 2100
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...152.90
 quantity cm3/10s: (40.60...167.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

5th speed 1/min: 2600
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 9.00...13.00
 1000S.: (7.00...15.00)

8th speed 1/min: 2400
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 32.50...42.50
 1000S.: (31.50...43.50)

9th speed 1/min: 2100
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 42.00...44.00
 1000S.: (40.80...45.20)

12th speed 1/min: 1250
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 50.00...51.00
 1000S.: (48.30...52.70)

20th speed 1/min: 700
 Charge press. hPa: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 43.50...46.50
 1000S.: (42.80...47.20)

21th speed 1/min: 450

Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.20...43.20
1000S.: (34.70...45.70)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.00...18.00
1000S.: (13.00...21.00)

High Idle:

1st speed 1/mi: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 16.00...18.00
1000S.: (13.00...21.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 7.00...8.00
1000S.: (5.50...9.50)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm3/ : -4.5...-6.5 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Inj.-qty. cm3/: 0.0...+3.0 Z'
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):

A03

1st speed 1/min: 1250
TD-travel : -2.5...2.9 '
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : -0.1...-0.3 "
difference bar: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply pump-
pressure : -1.0...-1.4 "
difference bar: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 34.00...36.00
1000S.: (32.00...38.00)

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 35.00...55.00
1000S.: (35.00...55.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 31.00...51.00
1000S.: (31.00...51.00)

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 37.00...43.00
1000S.: (32.50...47.50)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: KOT
MS	mm: 1.1...1.5
LDA stroke	mm: -
XK	mm: LP=0.8..3.0
Ya	mm: 37.6...41.6
Yb	mm: 50.4...63.3

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

Pump in stepped LDA

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW
Edition : 03.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2000R569
Type number : 0 460 494 352
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 028.2 JG5 1.9 L

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 4.30...4.70
Shutoff
electromagnet Volt: 12

Supply-pump pressure

A05

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 47.50...48.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000S.: 37.00...38.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 475
Del. quantity cm3/
1000S.: 6.50...8.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2160
Charge press hPa: 750
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...65.00
mind 1000S.: 35.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
Charge press hPa: 750
TD travel mm: 6.70...7.50
mm: (6.40...7.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 4.30...4.70
mm: (3.80...5.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
Charge press hPa: 750
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Charge press. hPa: 750
Supply-pump
pressure bar: 8.10...8.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 900
Charge press. hPa: 750
Supply-pump
pressure bar: 5.50...6.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 2000
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
Charge-air pressure-setting
point hPa: 250
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 41.00...42.00
1000S.: (38.50...44.50)

2nd speed 1/min: 2190
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

4th speed 1/min: 2150
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...32.00
1000S.: (12.00...32.00)

5th speed 1/min: 2160
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (6.00...18.00)

6th speed 1/min: 2170
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...12.00
1000S.: (0.00...12.00)

8th speed 1/min: 2140
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...38.00
1000S.: (20.00...40.00)

9th speed 1/min: 2000
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...44.00
1000S.: (40.80...45.20)

12th speed 1/min: 1500
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.50...48.50
1000S.: (45.80...50.20)

15th speed 1/min: 900
Charge press. hPa: 750

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 41.00...42.00
1000S.: (38.50...44.50)

18th speed 1/min: 750
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...38.00
1000S.: (34.50...40.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 475
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.50...8.50
1000S.: (3.50...11.50)
2nd speed 1/min: 700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...85.00
1000S.: (45.00...85.00)

2nd speed 1/min: 340
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.00...40.00
1000S.: (20.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...65.00
1000S.: (35.00...65.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: KOT
MS mm: 1.0...1.4
Ya mm: 38.6...40.6
Yb mm: 66.0...76.0

Remarks:

Ya = Distance between VE flange and
speed-control lever in idle
position

A07

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

Permissible port/port scatter with
stop test, electrical = max. 5.0
ccm/1000 S.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.03.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 885

Injection pump
Pump designation : PES4M55C320RS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/2000M56-14
Governor no. : 0 420 021 271

Customer-spec. information
Customer : MB-PKW

Engine : OM601

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

A08

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
position degrees: 50...0

3rd rack travel in: 8.65...9.15

Speed rpm : 2200

4th rack travel in: 2550

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375

Testing:

```
Speed          rpm : 250
Minimum rack trave: 10.20
Speed          rpm : 375
Rack travel in mm : 5.10...5.30
Speed          rpm : 1000
Maximum rack trave: 1.45
```

SET IDLE AUXILIARY SPRING

Speed rpm : 450
 Rack travel in mm : 3.80...4.00
 : (3.70...4.10)

TORQUE CONTROL

Torque control curve - 1st version

```
1st speed rpm : 1000
  Rack travel in m: 12.10...12.20
2nd speed rpm : 1800
  Rack travel in m: 11.80...12.00
3rd speed rpm : 2000
  Rack travel in m: 11.70...11.90
```

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 940
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.30...0.50
2nd pressure hPa : 750
  Rack travel in m: 1.40...1.80
```

FUEL DELIVERY CHARACTERISTICS

1st version

```

Speed          rpm      : 1800
Del.quantity   cm3/     : 40.0...41.6
                1000 s : (39.0...42.6)
Spread         cm3      : 2.50
                1000 s : (3.0)
Speed          rpm      : 2000
Del.quantity   cm3/     : 40.0...42.0
                1000 s : (39.0...43.0)
Spread         cm3      : 2.50
                1000 s : (3.00)

```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 54.0...0.0
                1000 s: (54.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```
1st version
Speed          rpm      : 2200
Del.quantity   cm3/     : 29.0...33.0
                1000 s : (28.0...34.0)
Spread         cm3      : 2.50
                1000 s : (3.00)
```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 5.10...5.30
Del.quantity cm3/   : 6.0...7.0
            1000 s : (5.5...10.0)
Spread     cm3      : 1.00
            1000 s : (1.50)
```

SETTING PNEUMATIC FAST IDLE
(ELA)

```
Speed      rpm      : 425
Rack travel in mm : 6.50...8.10
Del.quantity cm3/  : 12.00...20.00
              1000 s: -
Vacuum      hPa     : 400
```

Remarks:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE

With $n = 375$ /min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $15.3^{\circ} \dots 15.7^{\circ}$
($15.2 \dots 15.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 09.05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 889

Injection pump
Pump designation : PES4M55C32ORS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF375/2300M75-2
Governor no. : 0 420 021 166

Customer-spec. information
Customer : MB-PKW

Engine : OM601

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.20...8.60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $16.8^\circ \dots 17.2^\circ$
($16.7 \dots 17.3^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.03.94
Replaces : 18.12.92
Test oil : ISO-4113

Combination no. : 0 400 074 890

Injection pump
Pump designation : PES4M55C320RS183
EP type number : 0 410 054 955
Governor
Governor design. : RSF375/2300M75-1
Governor no. : 0 420 021 163

Customer spec. information
Customer : MB

Engine : OM601-ECE

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del. quantity cm3/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del. quantity cm3/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.80...9.20

Speed rpm : 2500

4th rack travel in: 2900

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 12...14

Setting point w/out bumper spring

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 09.05.94
Replaces : 25.09.92
Test oil : ISO-4113

Combination no. : 0 400 074 891

Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF375/2300M75
Governor no. : 0 420 021 160

Customer spec. information
Customer : MB

Engine : OM601-ECE

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (2.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2900

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.20...1.30

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Testing:

```
Speed          rpm : 250
Minimum rack travel: 11.00
Speed          rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed          rpm : 660...760
Speed          rpm : 1000
Maximum rack travel: 1.30
```

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.30...5.50
: (5.20...5.60)

TORQUE CONTROL

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.30...12.40
2nd speed   rpm   : 1800
  Rack travel in m: 11.70...11.80
3rd speed   rpm   : 2300
  Rack travel in m: 11.40...11.60
```

Aneroid/Altitude Compensator Test

1st version

```

Setting
Speed      rpm      : 1000
Pressure   hPa      : 950
Rack travel mm    : 0.00...0.20

```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

FUEL DELIVERY CHARACTERISTICS

1st version

```

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm3/ : 33.0...34.5
1000 s: (32.0...35.5)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm3/ : 34.0...36.0
1000 s: (33.0...37.0)

```

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
               1000 s : (52.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 22.0...26.0
                1000 s: (21.0...27.0)
Spread         cm3 : 2.50
                1000 s: (3.00)

```

LOW IDLE

```
Speed          rpm      : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/  : 6.0...7.0
               1000 s: (5.5...10.0)
Spread         cm3     : 1.00
               1000 s: (1.50)
```

SETTING PNEUMATIC FAST IDLE (FI)

```
Speed      rpm      : 425
Rack travel in mm : 8.50...8.90
Del.quantity cm3/  : 22.0...26.0
              1000 s: (21.0...27.0)
Vacuum      hPa     : 400
```

Remarks:

: KARD 1000 1/MIN
: (-9.0...11.0 MM3/H.)
: I = 3 A

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

With $n = 375 \text{ 1/min.}$ and $p_u = 450 \text{ mbar}$,
control rod must move quickly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of

starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^\circ \dots 19.7^\circ$
($19.2^\circ \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BCSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.03.94
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 898
 Injection pump
 Pump designation : PES4M55C320RS172
 EP type number : 0 410 054 958
 Governor
 Governor design. : RSF375/2300M56-10
 Governor no. : 0 420 021 130

Customer spec. information
 Customer : MB-PKW

Engine : OM601-Abgl. MJ90

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

A20

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.30...8.70

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 900

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Testing:

SET IDLE AUXILIARY SPRING

TORQUE CONTROL

Aneroid/Altitude Compensator Test

Setting

Measurement

1st pressure hPa : 900

2nd pressure hPa : 750

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1100

Del.quantity cm3/ : 33.0...34.6

1000 s: (32.0...35.5)

1000 s: (3.0)

Aneroid pressure h: 1100

Speed rpm : 2300

Del.quantity cm3/ : 34.0...36.0

1000 s: (33.0...37.0)

STARTING FUEL DELIVERY

HIGH IDLE

Aneroid pressure h: 1100

Speed rpm : 2500

Del.quantity cm3/ : 20.0...24.0
1000 s: (19.0...25.0)

Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375

Rack travel in mm : 6.40...6.60

Del. quantity cm³/ : 6.0...7.0

1000 s: (5.5...10.0)

Spread cm³ : 1.00

1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425

Rack travel in mm : 8.10...9.70

Del.quantity cm3/ : 14.00...22.00

1000 s: -

Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°,
control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $16.8^\circ \dots 17.2^\circ$
($16.7 \dots 17.3^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 30.03.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 899

Injection pump
Pump designation : PES4M55C32ORS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/1700M69-4
Governor no. : 0 420 021 139

Customer spec. information
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 49.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 3.7...3.8

100 s: (3.6...3.9)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 0.6...0.7

100 s: (0.55...1.00)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 37.0...38.0

1000 : (36.0...39.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.00...9.50

Speed rpm : 1800

4th rack travel in: 2300

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 5.6

Testing:

Speed rpm : 250
Minimum rack travel: 10.20
Speed rpm : 375
Rack travel in mm : 5.50...5.70
Rack travel in mm : 3.00
Speed rpm : 580...680
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 420
Rack travel in mm : 4.40...4.60
 : (4.30...4.70)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1400
Rack travel in m: 11.70...12.00
3rd speed rpm : 1650
Rack travel in m: 11.40...11.70
4th speed rpm : 500*
Rack travel in m: 11.60...11.90
5th speed rpm : 800**
Rack travel in m: 12.00...12.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm3/ : 36.5...38.1
 1000 s: (35.5...39.1)
Spread cm3 : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1100

A24

Speed rpm : 1650
Del.quantity cm3/ : 37.0...39.0
 1000 s: (36.5...40.5)
Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500 *
Del.quantity cm3/ : 32.5...34.1
 1000 s: (31.5...35.1)
Spread cm3 : 2.50
 1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800**
Del.quantity cm3/ : 35.0...36.6
 1000 s: (34.0...37.6)
Spread cm3 : 2.50
 1000 s: (3.00)

INTERMEDIATE RATED SPEED

Control lever

position degrees: STUPSER 40°
Rack travel in mm : 0..0,3
Speed rpm : 500
Speed rpm : RW-DIFF.50°-40°

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Rack travel in mm : 9.00...9.50
Del.quantity cm3/ : 29.0...33.0
 1000 s: (28.0...34.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 6.0...7.0
 1000 s: (5.5...10.0)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425

Rack travel in mm : 7.00...8.60

Del. quantity cm³/ : -

1000 s: --

Vacuum hPa : 400

Remarks:

:

Sliding sleeve pre-travel = 6.25 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

* Setting point for negative torque
control - negative retainer behind
sliding sleeve

** Reference measurement:

Control-rod travel and delivery too
large - position spiral spring
downwards

Control-rod travel and delivery too
small - position spiral spring upwards

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = $15.3^\circ \dots 15.7^\circ$

($15.2 \dots 15.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 09.05.94
Replaces : 18.12.92
Test oil : ISO-4113

Combination no. : 0 400 074 904

Injection pump
Pump designation : PES4M55C320RS169
EP type number : 0 410 054 959
Governor
Governor design. : RSF375/2300M56-6
Governor no. : 0 420 021 110

Cust. part no. : T8

Customer-spec. information
Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 0.6...0.7
100 s: (0.5...1.0)

Spread cm3 : 0.1
100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0
1000 : (32.0...35.0)

Spread cm3 : 2.50
1000 : (3.00)

RATED SPEED

1st version

Control lever
position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 B
Edition : 09.05.94
Replaces : 28.05.90
Test oil : ISO-4113

Combination no. : 0 400 074 905

Injection pump
Pump designation : PES4M55C32ORS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/1900M69-1
Governor no. : 0 420 021 102

Customer-spec. information
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1-3-4-2

B01

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm3/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.0...5.2

Del. quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2100

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Testing:

```

Speed          rpm : 250
Minimum rack travel: 10.20
Speed          rpm : 375
Rack travel in mm : 5.00...5.20
Rack travel in mm : 3.00
Speed          rpm : 480...580
Speed          rpm : 1000
Maximum rack travel: 1.50

```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 420
Rack travel in mm : 3,9...4,1
                : (3,8...4,2)
```

TORQUE CONTROL

```

Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.80...12.90
2nd speed   rpm   : 1400
  Rack travel in m: 12.20...12.50
3rd speed   rpm   : 1900
  Rack travel in m: 11.40...11.70
4th speed   rpm   : 500 *
  Rack travel in m: 12.00...12.30 *
5th speed   rpm   : 800**
  Rack travel in m: 12.40...12.70**

```

Aneroid/Altitude Compensator Test

1st version

```

Setting
Speed      rpm      : 1000
Pressure   hPa      : 950
Rack travel mm : 0.00...0.20

```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

FUEL DELIVERY CHARACTERISTICS

1st version

```

Aneroid pressure h: 1100
Speed          rpm   : 1400
Del.quantity   cm3/   : 39.5...41.0
                1000 s: (38.5...42.0)
Spread         cm3    : 2.50
                1000 s: (3.0)
Aneroid pressure h: 1100

```

```
Speed rpm : 1900
Del.quantity cm3/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500 *
Del.quantity cm3/ : 34.5...36.0 *
1000 s: (33.5...37.0) *
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800**
Del.quantity cm3/ : 37.5...39.0 **
1000 s: (36.5...40.0)**
Spread cm3 : 2.50
1000 s: (3.00)
```

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed          rpm   : 2100
Rack travel in mm : 7.00...7.50
Del.quantity cm3/  : 22.0...26.0
                  1000 s: (21.0...27.0)
Spread         cm3   : 2.50
                  1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 5.00...5.20
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread     cm3      : 1.00
              1000 s: (1.50)
```

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (6,6...8,2)
Del.quantity cm3/ : -
1000 s : (11,5...19,5)
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

* Setting point for negative torque
control - negative retainer behind
sliding sleeve

** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
downwards
Control-rod travel and delivery too
small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.04.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 922

Injection pump
Pump designation : PES5M55C320RS168
EP type number : 0 410 055 978
Governor
Governor design. : RSI350/2000M56-15
Governor no. : 0 420 021 272

Customer-spec. information
Customer : MB-PKW

Engine : OM602 - 2,9L

1st version kw : 68.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 3.8...3.9

100 s: (3.7...4.0)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.65...9.15

Speed rpm : 2200

4th rack travel in: 2550

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.40...1.50

LOW IDLE 1

Control lever

position degrees: 12.0...16.0

Setting point w/out bumper spring

Speed rpm : 350

Testing:

```
Speed      rpm      : 250
Minimum rack travel: 9.20
Speed      rpm      : 350
Rack travel in mm : 5.20...5.40
Speed      rpm      : 1400
Maximum rack travel: 1.45
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 450
Rack travel in mm : 4.00...4.20
                : (3.90...4.30)
```

TORQUE CONTROL

```

Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.10...12.20
2nd speed   rpm   : 1800
  Rack travel in m: 11.90...12.10
3rd speed   rpm   : 2000
  Rack travel in m: 11.70...11.90

```

Aneroid/Altitude Compensator Test

1st version

Setting

Speed	rpm	:	1000
Pressure	hPa	:	940
Rack travel	mm	:	0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.30...0.50
2nd pressure hPa : 750
Rack travel in m: 1.40...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

```

Speed          rpm      : 1800
Del.quantity   cm3/     : 40.0...41.6
                1000 s: (39.0...42.6)
Spread         cm3      : 2.50
                1000 s: (3.0)
Speed          rpm      : 2000
Del.quantity   cm3/     : 40.0...42.0
                1000 s: (39.0...43.0)
Spread         cm3      : 2.50
                1000 s: (3.00)

```

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 54.0...0.0
                1000 s: (54.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

1st version

```
Speed      rpm      : 2200
Del.quantity cm3/    : 29.0...33.0
            1000 s: (28.0...34.0)
Spread     cm3       : 2.50
            1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/  : 6.0...7.0
            1000 s: (5.5...10.0)
Spread     cm3      : 1.00
            1000 s: (1.50)
```

SETTING PNEUMATIC FAST IDLE (ELA)

```
Speed      rpm      : 400
Rack travel in mm : 5.30...6.90
Del.quantity cm3/  : 7.00...15.00
              1000 s: -
Vacuum      hPa     : 400
```

Remarks:

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 925

Injection pump
Pump designation : PES5M55C320RS201
EP type number : 0 410 055 972
Governor
Governor design. : RSF350/2500M56-13
Governor no. : 0 420 021 171

Customer-spec. information
Customer : MB-PKW

Engine : OM605

1st version kW : 83.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 3.65...3.75

100 s: (3.55...3.85)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 0.8...0.9

100 s: (0.75...1.15)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 1100

Del.quantity : 36.5...37.5

1000 : (35.5...38.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.60

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
- Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.04.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 075 926
Injection pump
Pump designation : PES5M55C32URS201
EP type number : 0 410 055 972
Governor
Governor design. : RSF350/2500M75-3
Governor no. : 0 420 021 173

Customer-spec. information
Customer : MB-PKW

Engine : OM605

1st version kW : 83.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.70...12.80

Del. quantity cm3/ : 3.65...3.75

100 s: (3.55...3.85)

Spread cm3 : 0.15

100 s: (0.25)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del. quantity cm3/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 1100

Del. quantity : 36.5...37.5

1000 : (35.5...38.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.60

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1400

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

Sliding sleeve pre-travel = 6.25 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 18.04.94
Replaces : 27.10.92
Test oil : ISO-4113

Combination no. : 0 400 075 930

Injection pump
Pump designation : PES5M55C320RS177
EP type number : 0 410 055 974
Governor
Governor design. : RSF340/2300M74-1
Governor no. : 0 420 021 156

Cust. part no. : T8

Customer-spec. information
Customer : MB-PKW

Engine : OM602A-D/A (KAT)

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 588 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 51.7...52.7

1000 : (50.7...53.7)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,5...8,9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 8...12 FD<270
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5.6

Testing:

Speed rpm : 150 *
Minimum rack trave: 10.0+1
Speed rpm : 345
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.50
Speed rpm : 550...650
Speed rpm : 1000
Maximum rack trave: 1.80

LOW IDLE 2

Control lever

position degrees: 8-12FD 270
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5,6

Testing:

Speed rpm : 220
Rack travel in mm : MIN. 8,0 **
Speed rpm : 345
Rack travel in mm : 5,5...5,7
Speed rpm : 580
Rack travel in mm : 2,5
Speed rpm : 680
Rack travel in mm : 2,5

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 4,7-4,9FD270
: 4,2-4,4 FD<270

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 13.00...13.20
3rd speed rpm : 2200
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050

B14

Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 34.0...35.0
1000 s: (33.0...36.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 54.0...0.0
1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 30.0...34.0
1000 s: (29.0...35.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 345
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 6.0...7.0
1000 s: (5.0...9.5)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 370
Rack travel in mm : (11,8...13,3)
Del. quantity cm³/ : -
1000 s: (38,0...46,0)
Current A : 1,8

Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s: 54,0 1,8A

Remarks:

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)
Control lever on full-load stop. At $n = 1000$ min
 $I = 2.5$ A, difference in delivery referenced to
delivery (5.6...7.6) ccm/1000 strokes.

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CORRECTION OF INJECTED-FUEL QUANTITY
-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

Sliding sleeve pre-travel = 6.25 mm

Testing and adjusting the control-rod-
travel sensor with evaluation circuit
KDEP-P400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1850 hPa to ALDA. Run up to speed of
1000 1/min; a voltage of 2.457...2.517
(2.427...2.547) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel
sensor

At a speed of 1000 1/min, set fuel
delivery at 21,5...22,5 (20,5...23,5)
ccm/1000 strokes with control lever.
Shift control-rod-travel sensor until
 $U = 1.633...1.639$ (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.457...
2.517 V must be attained.

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 42,0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C3
Edition : 18.04.94
Replaces : 15.10.91
Test oil : ISO-4113

Combination no. : 0 400 075 938

Injection pump
Pump designation : PES5M55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF350/2300M71-3
Governor no. : 0 420 021 136

Customer-spec. information
Customer : MB-PKW

Engine : OM602-ECE MJ90

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...173

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 0.5...0.6

100 s: (0.45...0.9)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12..16 FD<270

Setting point w/out bumper spring

Testing:

LOW IDLE 2

Testing:

SET IDLE AUXILIARY SPRING

TORQUE CONTROL

Aneroid/Altitude Compensator Test

1st version

Measurement

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

1st version

STARTING FUEL DELIVERY

HIGH IDLE

LOW IDLE

SETTING PNEUMATIC FAST IDLE (FLA)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = $19.3^\circ \dots 19.7^\circ$

($19.2^\circ \dots 19.8^\circ$) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At $n = 1000$ min. -1 , $I = 2.5$ A, difference in delivery referenced to full-load delivery ($6.3 \dots 8.3$) ccm/1000 strokes.

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 5.2 mm

Engine with two-mass flywheel

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 939

Injection pump
Pump designation : PESSM55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF350/Z300M71-2
Governor no. : 0 420 021 135

Customer-spec. information
Customer : MB-PKW

Engine : OM602-Abgl. M190

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.90...9.30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12..16 FD 270

Setting point w/out bumper spring

Speed rpm : 350
Rack travel in mm : 6.5

Testing:

Speed rpm : 220**
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.50
Speed rpm : 620...720
Speed rpm : 1000
Maximum rack travel: 1.50

LOW IDLE 2

Control lever
position degrees: 12-16 <270
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 150*
Rack travel in mm : 11+1 < FD270
Speed rpm : 350
Rack travel in mm : 6.4...6.6
Speed rpm : 670
Rack travel in mm : 2.5
Speed rpm : 1000
Rack travel in mm : MAX.1.5

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.2...5.4
: (5.1...5.5)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in mm : 12.40...12.50
2nd speed rpm : 1800
Rack travel in mm : 11.80...12.00
3rd speed rpm : 2200
Rack travel in mm : 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in mm : 0.50...0.70
2nd pressure hPa : 750

B20

Rack travel in mm : 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h : 1100
Speed rpm : 1800
Del. quantity cm³/ : 34.5...36.1
1000 s : (33.5...37.1)
Spread cm³ : 2.50
1000 s : (3.0)
Aneroid pressure h : 1100
Speed rpm : 2200
Del. quantity cm³/ : 34.0...36.0
1000 s : (33.0...37.0)
Spread cm³ : 2.50
1000 s : (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 52.0...0.0
1000 s : (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h : 1100
Speed rpm : 2500
Rack travel in mm : 8.90...9.30
Del. quantity cm³/ : 22.0...26.0
1000 s : (21.0...27.0)
Spread cm³ : 2.50
1000 s : (3.00)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del. quantity cm³/ : 6.0...7.0
1000 s : (5.5...10.0)
Spread cm³ : 1.00
1000 s : (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400
Rack travel in mm : 7.40...7.80
Del. quantity cm³/ : 9.0...12.0
1000 s : -
Vacuum hPa : 400

Remarks:

:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $16.8^{\circ} \dots 17.2^{\circ}$
($16.7 \dots 17.3^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

ADJUSTMENT OF ACTIVE BUCKING DAMPING
(ARD)
Control lever on full-load stop. At n
= 1000 min. -1 , $I = 2.5$ A, difference
in delivery referenced to full-load
delivery ($6.3 \dots 8.3$) ccm/1000 strokes.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 5.2 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF
-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Engine with two-mass flywheel

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C5
 Edition : 20.04.94
 Replaces : 15.04.91
 Test oil : ISO-4113
 Combination no. : 0 400 075 940
 Injection pump
 Pump designation : PES5M55C320RS173
 EP type number : 0 410 055 976
 Governor
 Governor design. : RSF340/2300M60-26
 Governor no. : 0 420 021 133

Customer-spec. information
 Customer : MB-PKW

Engine : OM602-Abgl. MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 315.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.9...9.3

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C8
Edition : 20.04.94
Replaces : 15.04.91
Test oil : ISO-4113

Combination no. : 0 400 075 941

Injection pump
Pump designation : PES5M55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF350/2300M56-11
Governor no. : 0 420 021 131

Customer-spec. information
Customer : MB-PKW

Engine : OM602-Abgl. MJ90

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.25...3.35

100 s: (3.15...3.45)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.9...9.3

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Testing:

SET IDLE AUXILIARY SPRING

TORQUE CONTROL

Aneroid/Altitude Compensator Test

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

1st version

Spread cm³ : 2.50
 1000 s: (3.00)

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
            1000 s : (52.0...0.0)
Rack travel in mm  : 20.10...0.00
```

1st version

LOW IDLE

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 400
Rack travel in mm : 6.7...8.1
Del.quantity cm³/ : 7.5...13.5
1000 s : -
Vacuum hPa : 400

Remarks:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
- Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 C9
Edition : 27.04.94
Replaces : 13.11.89
Test oil : ISO-4113

Combination no. : 0 400 075 942

Injection pump
Pump designation : PESSM55C320RS158-1
EP type number : 0 410 055 979
Governor
Governor design. : RSF340/2300M73
Governor no. : 0 420 021 129

Customer-spec. information
Customer : MB-PKW

Engine : OM602A-ECE

1st version kW : 92.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)
Rack travel in mm : 20.00...22.00
Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 5.25...5.35

100 s: (5.15...5.45)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 345.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 52.5...53.5

1000 : (51.5...54.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.1...8.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.7...1.8

LOW IDLE 1

Control lever

position degrees: 8...12 FD 270

Setting point w/out bumper spring

Speed rpm : 345
Rack travel in mm : 5.3

Testing:

Speed rpm : 220**
Minimum rack travel: 8.00
Speed rpm : 345
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.50
Speed rpm : 560...660
Speed rpm : 1000
Maximum rack travel: 1.80

LOW IDLE 2

Control lever
position degrees: 8...12
Setting point w/out bumper spring
Speed rpm : 345
Rack travel in mm : 5.3

Testing:

Speed rpm : 150*
Rack travel in mm : 10+1 FD<270
Speed rpm : 345
Rack travel in mm : 5.2...5.4
Speed rpm : 670
Rack travel in mm : 2.5
Speed rpm : 1000
Rack travel in mm : 1.7...1.8

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.00
2nd speed rpm : 1600
Rack travel in m: 13.10...13.30
3rd speed rpm : 2200
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.45...0.85

Measurement

Speed 1/min : 1000

1st pressure hPa : 1100
Rack travel in m: 3.55...3.75
2nd pressure hPa : 750
Rack travel in m: 5.40...5.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 51.0...52.5
1000 s: (50.0...53.5)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 1000
Del.quantity cm3/ : 36.0...37.0
1000 s: (35.0...38.0)
Spread cm3 : 2.50
1000 s: (3.00)

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.10...8.50
Del.quantity cm3/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 345
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 6.0...7.0
1000 s: (5.0...10.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 345
Rack travel in mm : 11.4...13.4
Del.quantity cm3/ : 39.0...47.0
1000 s: -
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100

Del. quantity cm³/ : -
min. 1000 s: - 1.8 A

Remarks:

: ARD
: 1000 1/MIN -6.2..6.4

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.
Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At $n = 345$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.25 mm

* Sliding sleeve pre-travel = 4.7 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF
-Control-lever position 44,5° max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 42,0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 19.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 953

Injection pump
Pump designation : PES6M55C320RS203
EP type number : 0 410 056 982
Governor
Governor design. : RSF315/2500M70-11
Governor no. : 0 420 021 270

Customer spec. information
Customer : MB-PKW - USA

Engine : OM606

1st version kW : 95.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del. quantity cm³/ : 3.75...3.85

100 s: (3.65...3.95)

Spread cm³ : 0.25

100 s: (0.30)

2nd speed rpm : 290.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del. quantity : 37.5...38.5

1000 : (36.5...39.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
position degrees: 50...0

3rd rack travel in: 7.80...8.00

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 7.3

Testing:

Speed rpm : 220
Minimum rack trave: 9.45
Speed rpm : 290
Rack travel in mm : 7.20...7.40
Rack travel in mm : 3.00
Speed rpm : 625...725
Speed rpm : 1100
Maximum rack trave: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.90...6.10
: (5.80...6.20)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 13.10...13.20
2nd speed rpm : 2000
Rack travel in m: 12.25...12.55
3rd speed rpm : 2500
Rack travel in m: 11.75...12.05
4th speed rpm : 500 *
Rack travel in m: 12.25...12.55
5th speed rpm : 900**
Rack travel in m: 12.85...13.15

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 940
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1100

1st pressure hPa : 900
Rack travel in m: 0.30...0.50
2nd pressure hPa : 750
Rack travel in m: 1.40...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 2000
Del.quantity cm3/ : 37.5...39.1
1000 s: (36.5...40.1)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100

C04

Speed rpm : 2500
Del.quantity cm3/ : 36.5...38.5
1000 s: (35.5...39.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500 *
Del.quantity cm3/ : 31.5...33.1
1000 s: (30.5...34.1)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 900**
Del.quantity cm3/ : 35.5...37.1
1000 s: (34.5...38.1)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2700
Del.quantity cm3/ : 14.0...18.0
1000 s: (13.0...19.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 7.20...7.40
Del.quantity cm3/ : 8.0...9.0
1000 s: (7.0...10.5)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : 12.4...13.8
Del.quantity cm3/ : 30.0...38.0
1000 s: -
Current A : 1.8

Control lever at full-load stop

Speed rpm : 3000
Rack travel in mm : 0.00...2.00

Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: - 1.8A

Remarks:

: * RW-DIFF.STUPSER
: 50 AUF 40 GRAD 0.2MM
: N = 500 1/MIN

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

* Setting point for negative torque
control - negative retainer behind
sliding sleeve

** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
downwards
Control-rod travel and delivery too
small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 19.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 954

Injection pump
Pump designation : PES6M55C320RS203
EP type number : 0 410 056 982
Governor
Governor design. : RSF315/2500M70-10
Governor no. : 0 420 021 175

Customer-spec. information
Customer : MB-PKW

Engine : OM606

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del. quantity cm³/ : 3.85...3.95

100 s: (3.75...4.05)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 0.8...0.9

100 s: (0.7...1.15)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del. quantity : 38.5...39.5

1000 : (37.5...40.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Control lever at full-load stop
Speed rpm : 3000
Rack travel in mm : 0.00...2.00

Current

short-duration A : 3.0

Starting test

Speed rpm : 100

Del. quantity cm³/ : -

min. 1000 s: - 1.8 A

Remarks:

: RW-DIFF. STUPSER
: 50 AUF 40 GRAD 0.2MM
: BEI N = 500 1/MIN

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At n = 290 1/min and pu = 450 mbar

control rod must move briskly to

control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 16.8°...17.2°

(16.7°...17.3°) angular displacement of

cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between

max. and min. value = max. 1° angular

displacement of cam

* Setting point for negative torque

control - negative retainer behind

sliding sleeve

** Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

downwards

Control-rod travel and delivery too

small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 19.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 955

Injection pump
Pump designation : PES6M55C320RS203
EP type number : 0 410 056 982
Governor
Governor design. : RSF315/2500M76
Governor no. : 0 420 021 174

Customer-spec. information
Customer : MB-PKW

Engine : OM606

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.30...13.40

Del. quantity cm³/ : 3.85...3.95

100 s: (3.75...4.05)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 0.8...0.9

100 s: (0.7...1.05)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1100

Del. quantity : 38.5...39.5

1000 : (37.5...40.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2700

4th rack travel in: 3150

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control Lever

position degrees: 8.5...12.5

Setting point w/out bumper spring

Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: - 1.8A

TESTING & SETTING

RACK TRAVEL SENSOR

Control lever at full load stop
Speed rpm : ARD
Rack travel in mm : 1.50...1.90 mm
Voltage volt : FM = -7.0...-9.0
volt : N = 1100 1/MIN

Remarks:

: RW-DIFF.STUPSER
: 50 AUJ 40 GRAD 0.2mm
: N = 500 1/MIN

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 300 1/min. and p_w = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

* Setting point for negative torque
control - negative retainer behind
sliding sleeve

** Reference measurement:

Control-rod travel and delivery too
large - position spiral spring
downwards
Control-rod travel and delivery too
small - position spiral spring upwards

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) angular displacement of
the cam after cylinder 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 20.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 956

Injection pump
Pump designation : PES6M55C320RS181
EP type number : 0 410 056 983
Governor
Governor design. : RSF305/2125M64-20
Governor no. : 0 420 021 168

Customer-spec. information
Customer : MB-PKW

Engine : OM603A D35 USA

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 5.9...6.0

100 s: (5.8...6.1)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 280.0

Rack travel in mm : 5.1...5.3 FD366

Del.quantity cm³/ : 0.8...0.9

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.15)

3rd speed rpm : 280

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : < FD 366

100 s: 0.5...0.6

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1900

Del.quantity : 59.0...60.0

1000 : (58.0...61.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.30...9.70

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 280

Rack travel in mm : 5.2 FD 366

Testing:

Speed rpm : 200

Minimum rack trave: 7.00

Speed rpm : 280

Rack travel in mm : 5.10...5.30

Speed rpm : 1000

Maximum rack trave: 2.00

LOW IDLE 2

Control lever

position degrees: 8.0...12.0

Setting point w/out bumper spring

Speed rpm : 280

Rack travel in mm : 5.6 FD <366

Testing:

Speed rpm : 200

Rack travel in mm : MIN.7.0

Speed rpm : 280

Rack travel in mm : 5.6...5.8

Speed rpm : 1000

Rack travel in mm : 2.0

SET IDLE AUXILIARY SPRING

Speed rpm : 400

Rack travel in mm : 4.7.4.8FD366

: 4.3..4.5 FD<366

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 14.10...14.20

2nd speed rpm : 1600

Rack travel in m: 13.20...13.40

3rd speed rpm : 2000

Rack travel in m: 12.35...12.65

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1000

Pressure hPa : 1600

Rack travel mm : 0.80...1.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 1100

C13

Rack travel in m: 3.40...3.60

2nd pressure hPa : 750

Rack travel in m: 5.20...5.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900

Speed rpm : 1600

Del.quantity cm3/ : 56.5...58.1

1000 s: (55.5...59.1)

Spread cm3 : 2.50

1000 s: (3.0)

Aneroid pressure h: 1900

Speed rpm : 2000

Del.quantity cm3/ : 54.0...56.0

1000 s: (53.0...57.0)

Spread cm3 : 2.50

1000 s: (3.00)

Aneroid pressure h: 1100

Speed rpm : 1000

Del.quantity cm3/ : 40.0...41.0

1000 s: (39.0...42.0)

Spread cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1900

Speed rpm : 2300

Rack travel in mm : 9.30...9.70

Del.quantity cm3/ : 37.0...41.0

1000 s: (36.0...42.0)

Spread cm3 : 2.50

1000 s: (3.00)

LOW IDLE

Speed rpm : 280

Rack travel in mm : 5.7 / 5.2 < FD

Del.quantity cm3/ : 8.5-9.0 (5-9.5)

1000 s: 5.5-6.5 FD<366

Spread cm3 : (5..9.5)

1000 s: -

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 305
Rack travel in mm : 11.6...13.0
Del. quantity cm³/ : 41.0...49.0
1000 s : -
Current A : 1.8

Control lever at full-load stop
Speed rpm : 2700
Rack travel in mm : 0.0...2.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s : - 1.8 A

Remarks:

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-F400

Receiving inspection

Shift control lever to full-load stop.
Set 13.5 V at stabilizer. Apply
1900 hPa at ALDA. Run up to speed of
1000 1/min; a voltage of 2.487...2.547
(2.457...2.577) V must be displayed
on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel
delivery at 24.0...25.0 (23.0...26.0)
cm/1000 strokes with control lever.
Shift control-rod-travel sensor until
U = 1.633...1.639 (1.635...1.637) V is
indicated. Tighten fastening screws
with 1...2 Nm. Control lever to full-
load stop; voltage value of 2.487...
2.547 V must be attained.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At n = 290 1/min and p_u = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel =
5,25...5,75 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 33.0°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 16.8°...17.2°
(16.7...17.3°) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W42
Edition : 02.05.94
Replaces : 15.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 957

Injection pump
Pump designation : PES6M55C320RS171
EP type number : 0 410 056 989
Governor
Governor design. : RSF315/Z300M72-5
Governor no. : 0 420 021 165

Customer-spec. information
Customer : MB-PKW

Engine : OM603-ECE M190

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.65...0.75

100 s: (0.6...1.05)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.60...9.00

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Testing:

Speed rpm : 220
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 650...750
Speed rpm : 1000
Maximum rack travel: 1.30

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 5.3...5.5
: (5.2...5.6)

TORQUE CONTROL

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 12.00...12.10
2nd speed   rpm   : 1400
  Rack travel in m: 11.80...12.00
3rd speed   rpm   : 2200
  Rack travel in m: 11.30...11.50
```

Aneroid/Altitude Compensator Test

1st version

```

Setting
Speed      rpm      : 1000
Pressure   hPa      : 950
Rack travel mm    : 0.00...0.20

```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 900
  Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
  Rack travel in m: 1.80...2.20
```

FUEL DELIVERY CHARACTERISTICS

1st version

```

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm3/ : 31.0...32.5
                  1000 s: (30.0...33.5)
Spread cm3 : 2.50
                  1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm3/ : 34.0...36.0
                  1000 s: (33.0...37.0)

```

Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed          rpm      : 100
Del.quantity   cm3/     : 52.0...0.0
               1000 s : (52.0...0.0)
Rack travel    in mm    : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed          rpm   : 2500
Rack travel in mm : 8.60...9.00
Del.quantity cm3/   : 22.0...26.0
                  1000 s: (21.0...27.0)
Spread         cm3   : 2.50
                  1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 300
Rack travel in mm : 6.80...7.00
Del.quantity cm3/   : 6.5...7.5
           1000 s : (6.0...10.5)
Spread     cm3      : 1.00
           1000 s : (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed      rpm      : 315
Rack travel in mm : 12.0...13.4
Del.quantity cm3/  : 27.0...35.0
              1000 s: -
Current A    : 1.8
```

```
Control lever at full-load stop
Speed      rpm      : 2950
Rack travel in mm : 0.0...1.0
Current
  short-duration A : 3.0
Starting test
Speed      rpm      : 100
Del.quantity cm3/   : -
min.       1000 s: -   1.8 A
```

Remarks:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of
cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 300$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At n
= 1000 min. -1 , $I = 2.5$ A, difference
in delivery referenced to full-load
delivery (6.3...8.3) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W39
 Edition : 10.05.94
 Replaces : 29.10.92
 Test oil : ISO-4113
 Combination no. : 0 400 076 959
 Injection pump
 Pump designation : PES6M55C32ORS180
 EP type number : 0 410 056 984
 Governor
 Governor design. : RSF315/2300M64-17
 Governor no. : 0 420 021 157

Customer-spec. information
 Customer : MB-PKW

Engine : OM603A-D/A (KAT)

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del.quantity : 51.0...52.0

1000 : (50.0...53.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.4...8.8

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack trave: 7.00

Speed rpm : 290
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.50
Speed rpm : 520...620
Speed rpm : 1000
Maximum rack travel : 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 4.2...4.4
: (4.1...4.5)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.70...13.80
2nd speed rpm : 1600
Rack travel in m: 13.00...13.20
3rd speed rpm : 2200
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.30...0.70

Measurement

Speed 1/min : 1000

1st pressure hPa : 1050
Rack travel in m: 3.40...3.60
2nd pressure hPa : 750
Rack travel in m: 4.90...5.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1600
Del.quantity cm3/ : 50.0...51.5
1000 s: (49.0...52.5)
Spread cm3 : 2.50
1000 s: (3.0)

Aneroid pressure h: 1850
Speed rpm : 2200
Del.quantity cm3/ : 48.5...50.5
1000 s: (47.5...51.5)
Spread cm3 : 2.50
1000 s: (3.00)

Aneroid pressure h: 1050
Speed rpm : 1000
Del.quantity cm3/ : 33.0...34.0
1000 s: (32.0...35.0)

Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1850
Speed rpm : 2500
Rack travel in mm : 8.40...8.80
Del.quantity cm3/ : 29.0...33.0
1000 s: (28.0...34.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (13.1...14.5)
Del.quantity cm3/ : -
1000 s: (43.0...51.0)
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: - 1.8 A

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 35,5°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

-Control-lever position 33.0°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 290$ 1/min and $p_u = 450$ mbar control rod must move briskly to control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 16.8°...17.2° (16.7°...17.3°) angular displacement of cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Pin projection = 16.60...16.70 mm

Locomotive

Testing and adjusting the control-rod-travel sensor with evaluation circuit

KDEP-P400

Receiving inspection

Shift control lever to full-load stop. Set 13.5 V at stabilizer. Apply 1850 hPa to ALDA. Run up to speed of 1000 1/min; a voltage of 2.457...2.517 (2.427...2.547) V must be displayed on the digital voltmeter.

Adjustment of the control-rod travel sensor

At a speed of 1000 1/min, set fuel delivery at 21.0...22.0 (20.0...23.0) cc/1000 strokes with control lever. Shift control-rod-travel sensor until $U = 1.633...1.639$ (1.635...1.637) V is indicated. Tighten fastening screws with 1...2 Nm. Control lever to full-load stop; voltage value of 2.457...2.517 V must be attained.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2.5 F1
Edition : 02.05.94
Replaces : 30.03.87
Test oil : ISO-4113

Combination no. : 0 400 076 960

Injection pump
Pump designation : PES6M55C320RS179
EP type number : 0 410 056 985
Governor
Governor design. : RSF315/2000M65-6
Governor no. : 0 420 021 161

Customer-spec. information
Customer : MB-PKW

Engine : OM603A-D35 GW

1st version kW : 100.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

C21

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del. quantity cm³/ : 5.8...5.9

100 s: (5.7...6.0)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.6...5.8

Del. quantity cm³/ : 0.65...0.75

100 s: (0.6...1.05)

Spread cm³ : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version:

Speed rpm : 1000

Aneroid pressure h: 1900

Del. quantity : 58.0...59.0

1000 : (57.0...60.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.2...7.6

Speed rpm : 2300

4th rack travel in: 2700

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.9...2.0

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 5.60...5.80
Rack travel in mm : 3.00
Speed rpm : 500...600
Speed rpm : 1000
Maximum rack travel: 1.90

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 4.2...4.4
: (4.1...4.5)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.60...13.70
2nd speed rpm : 1600
Rack travel in m: 12.60...12.80
3rd speed rpm : 2000
Rack travel in m: 11.50...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1600
Rack travel mm : 0.20...0.60

Measurement

Speed 1/min : 1000

1st pressure hPa : 1100
Rack travel in m: 2.85...3.05
2nd pressure hPa : 750
Rack travel in m: 4.60...5.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900
Speed rpm : 1600
Del.quantity cm³/ : 54.5...56.1
1000 s: (53.5...57.1)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1900
Speed rpm : 2000
Del.quantity cm³/ : 50.0...52.0
1000 s: (49.0...53.0)

Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 1000
Del.quantity cm³/ : 41.0...42.0
1000 s: (39.0...43.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1900
Speed rpm : 2300
Rack travel in mm : 7.20...7.60
Del.quantity cm³/ : 26.5...30.5
1000 s: (25.5...31.5)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 6.5...7.5
1000 s: (6.0...10.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : 11.8...13.2
Del.quantity cm³/ : 44.0...52.0
1000 s: -
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2700
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: - 1.8 A

Remarks:

:
Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $16.8^{\circ} \dots 17.2^{\circ}$
($16.7 \dots 17.3^{\circ}$) angular displacement of
cam following start of delivery of
cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

* Sliding sleeve pre-travel = 5.2 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF
-Control-lever position 35.5° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
-Control-lever position 33.0° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W29
Edition : 02.05.94
Replaces : 16.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 964

Injection pump
Pump designation : PES6M55C32ORS171
EP type number : 0 410 056 989
Governor
Governor design. : RSF315/2300M72-4
Governor no. : 0 420 021 138

Customer-spec. information
Customer : MB-PKW

Engine : OM603-ECE MJ90

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
(1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.25

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.7...0.8

100 s: (0.7...1.1)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Testing:

SET IDLE AUXILIARY SPRING

TORQUE CONTROL

1st version

Measurement

FUEL DELIVERY CHARACTERISTICS

1st version

STARTING FUEL DELIVERY

HIGH IDLE

1st version

LOW IDLE

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

```
Speed rpm : 315
Rack travel in mm : 12.0...13.4
Del.quantity cm3/ : 28.0...36.0
1000 s: -
Current A : 1.8
```

Control lever at full-load stop

```
Speed      rpm      : 2950
Rack travel in mm : 0.0...1.0
Current
```

short-duration A : 3.0

Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: - 1.8 A

Remarks:

: ARD = 1000 1/MIN
: - 6.6...8.6 MM3/H.

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^{\circ} \dots 19.7^{\circ}$
($19.2 \dots 19.8^{\circ}$) angular displacement of

cam following start of delivery of cylinder no. 1.
Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 300$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W30
Edition : 02.05.94
Replaces : 15.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 965

Injection pump
Pump designation : PES6M55C320RS174
EP type number : 0 410 056 988
Governor
Governor design. : RSF315/2300M72-3
Governor no. : 0 420 021 137

Customer-spec. information
Customer : MB-PKW

Engine : OM603-Abgl. M90

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.2

Del. quantity cm³/ : 0.7...0.8

100 s: (0.7...1.1)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.10...9.50

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

cam following start of delivery of cylinder no. 1.

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 300$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5° , control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W31
Edition : 01.05.94
Replaces : 16.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 966

Injection pump
Pump designation : PES6M55C320RS174
EP type number : 0 410 056 988
Governor
Governor design. : RSF315/2300M60-27
Governor no. : 0 420 021 134

Customer-spec. information
Customer : MB-PKW

Engine : OM603-Abgl. MJ90

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 0.6...0.7

100 s: (0.6...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.5...33.5

1000 : (31.5...34.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9.1...9.5

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3.0 W23
Edition : 02.05.94
Replaces : 16.10.91
Test oil : ISO-4113

Combination no. : 0 400 076 971

Injection pump
Pump designation : PES6M55C32ORS171
EP type number : 0 410 056 989
Governor
Governor design. : RSF315/230OM60-8
Governor no. : 0 420 021 114

Customer-spec. information
Customer : MB-PKW

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 1 688 901 111

Opening
pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

D05

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 6.7...6.9

Del. quantity cm³/ : 0.65...0.75

100 s: (0.60...1.05)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 6.7

Testing:

Speed rpm : 220
Minimum rack travel: 8.50
Speed rpm : 290
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 620...720
Speed rpm : 1000
Maximum rack travel: 1.30

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 5.0...5.2
 : (4.9...5.3)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in mm : 12.00...12.10
2nd speed rpm : 1400
Rack travel in mm : 11.70...11.90
3rd speed rpm : 2200
Rack travel in mm : 11.40...11.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in mm : 0.50...0.70
2nd pressure hPa : 750
Rack travel in mm : 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm³/ : 32.0...33.6
 1000 s: (31.0...34.6)
Spread cm³ : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm³/ : 34.0...36.0
 1000 s: (33.0...37.0)

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm³/ : 22.0...26.0
 1000 s: (21.0...27.0)
Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 6.5...7.5
 1000 s: (6.0...10.5)
Spread cm³ : 1.00
 1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : 12.3...13.7
Del.quantity cm³/ : 29.0...37.0
 1000 s: -
Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current
short-duration A : 3.0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: - 1.8 A

Remarks:

:
Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of

cylinder no. 1.

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 290$ 1/min and $p_u = 450$ mbar

control rod must move briskly to

control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 24.07.92
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 400 876 395

Injection pump
Pump designation : PES6A100D410RS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV425...1100A2C2161
-1L
Governor no. : 9 420 234 133

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 32...34

D08

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 2.0...2.4
100 s: (1.8...2.7)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 98.5...100.5

1000 : (96.5...102.5)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 8.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.70...10.90

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.60...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 175
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 116.0...119.0
1000 s: (114.0...121.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 86.0...90.0
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113
Combination no. : 0 402 046 825A
Injection pump
Pump designation : PES6P110A720LS3282
EP type number : 0 412 016 736
Governor
Governor design. : RQ300/1100PA800-2
Governor no. : 0 421 801 593

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.10...13.20
Del. quantity cm³/ : 13.6...13.8
100 s: (13.3...14.0)
Spread cm³ : 0.4
100 s: (0.8)

2nd speed rpm : 300
Rack travel in mm : 8.85...9.45
Del. quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del. quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 97.0...105.0

Setting point:
Speed rpm : 600
Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.00...2.40

LOW IDLE 1

Control lever

position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 325...365

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.15
Speed rpm : 1140...1150

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113
Combination no. : 0 402 046 826
Injection pump
Pump designation : PES6P110A720LS3282-1
EP type number : 0 412 016 746
Governor
Governor design. : RQ300/1100PA786-3
Governor no. : 0 421 801 706

Cust. part no. : 0200747702

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.10...13.20
Del. quantity cm³/ : 13.6...13.8
100 s: (13.3...14.0)
Spread cm³ : 0.4
100 s: (0.8)

2nd speed rpm : 300
Rack travel in mm : 8.0...8.6
Del. quantity cm³/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm³ : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 600
Rack travel in mm : 13.70...14.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del. quantity : 136.0...138.0
1000 : (133.5...140.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 106.0...114.0

Setting point:
Speed rpm : 600
Rack travel in mm : 13.2

Testing:

1st rack travel in: 12.15
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...2.40

LOW IDLE 1

Control lever
position degrees: 75.0...83.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 330...370

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm3 : 5.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:
Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 046 831A

Injection pump
Pump designation : PES6P110A720LS3282
EP type number : 0 412 016 736
Governor
Governor design. : RQ300/1100PA1015
Governor no. : 0 421 801 613

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM447 h

1st version kW : 157.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 13.6...13.8

100 s: (13.3...14.0)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 8.85...9.45

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.50...14.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 136.0...138.0

1000 : (133.5...140.5)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 97.0...105.0

Setting point:

Speed rpm : 600

Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.15
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Control lever
position degrees: 74.0...82.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 325...365

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.15
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 26.06.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 748
Injection pump
Pump designation : PE6P110A720RS3305
EP type number : 0 412 016 740
Governor
Governor design. : RSV300...1100P1A555
Governor no. : 0 421 833 379

Customer-spec. information
Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 13.90...14.10
Del. quantity cm³/ : 18.3...18.5
100 s: (18.0...18.7)
Spread cm³ : 0.4
100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.8...6.0
Del. quantity cm³/ : 1.0...1.6
100 s: (0.7...1.8)
Spread cm³ : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1300
Del. quantity : 183.0...185.0
1000 : (180.5...187.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 96...102

Testing:
1st rack travel in: 12.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1075...1105
3rd rack travel in: 4.00
Speed rpm : 1090...1120

4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.90...14.10
2nd speed rpm : 500
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 550

1st pressure hPa : —
Rack travel in m: 12.20...12.40
2nd pressure hPa : 640
Rack travel in m: 13.40...13.60
3rd pressure hPa : 510
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: —
Speed rpm : 550
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

D17

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
Edition : 11.01.93
Replaces : 08.92
Test oil : ISO-4113

Combination no. : 0 402 076 748

Injection pump
Pump designation : PES6P110A720RS3305
EP type number : 0 412 016 740
Governor
Governor design. : RSV300...1100P1A555
Governor no. : 0 421 833 379

Customer spec. information
Customer : LIEBHERR

Engine : D 926 TI

1st version kW : 210.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.40...15.50

Del. quantity cm³/ : 18.5...18.7

100 s: (18.2...18.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1300

Del. quantity : 185.0...187.0

1000 : (182.5...189.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 14.40

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110
3rd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1260
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.9
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.40...15.50
2nd speed rpm : 500
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1300
Rack travel mm : 15.40...15.50

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 13.40...13.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 640
Rack travel in m: 14.90...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.5...153.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.40

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (141.0...169.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
Edition : 19.04.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 750
Injection pump
Pump designation : PES6P120A720RS3311
EP type number : 0 412 026 760
Governor
Governor design. : RSV400...105CP2A557
Governor no. : 0 421 833 394

Customer-spec. information
Customer : FNI-GEOTECH

Engine : P 396

1st version kW : 179
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.8

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.40...11.50

Del. quantity cm³/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90.0...98.0

Testing:

1st rack travel in: 10.45
Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1148...1163
3rd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1320
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 67.0...75.0
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 530...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 12.40...12.60
3rd speed rpm : 935
Rack travel in m: 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 950
Rack travel in m: 12.20...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 182.0...184.0
1000 s: (179.0...187.0)
Spread cm3 : 5.0
1000 s: (9.0)
Aneroid pressure h: 1500
Speed rpm : 750

Del.quantity cm3/ : 227.0...233.0
1000 s: (224.0...236.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.45
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...210.0
1000 s: (176.0...214.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
Edition : 19.04.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 751
Injection pump
Pump designation : PES6P120A720R53311
EP type number : 0 412 026 760
Governor
Governor design. : RSV400...1050P2A557-
1
Governor no. : 0 421 833 396

Customer-spec. information
Customer : FNH-GEOTECH

Engine : P 396

1st version kW : 157
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.8

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 15.2...15.4

100 s: (14.9...15.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 1.8...2.1

100 s: (1.2...2.4)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del. quantity : 152.5...154.5

1000 : (149.5...157.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0

Testing:

1st rack travel in: 9.35
Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1148...1163
3rd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1320
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.5
Speed rpm : 400
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 520...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 9.80...9.90
2nd speed rpm : 750
Rack travel in m: 11.10...11.30
3rd speed rpm : 910
Rack travel in m: 11.90...11.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 900
Rack travel in m: 10.80...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 152.5...154.5
1000 s: (149.5...157.5)
Spread cm3 : 5.0
1000 s: (9.0)
Aneroid pressure h: 1500
Speed rpm : 750

D23

Del.quantity cm3/ : 191.0...197.0
1000 s: (188.0...200.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.35
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...210.0
1000 s: (176.0...214.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 02.94
 Test oil : ISO-4113

Combination no. : 0 402 646 783

Injection pump
 Pump designation : PE6P12DA32OLS7858
 EP type number : 0 412 626 875
 Governor
 Governor design. : RGV300...1050PA1065
 -1
 Governor no. : 0 421 814 068

Cust. part no. : 0250740002

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.93...1.33

2nd speed rpm : 370

travel mm : 1.75...2.25

3rd speed rpm : 420

travel mm : 2.18...2.68

4th speed rpm : 750

travel mm : 4.62...5.12

5th speed rpm : 1107

travel mm : 9.65...9.95

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210
Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del.quantity : 172.0...174.0
1000 : (169.0...177.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 10.25
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.20...11.30
2nd pressure hPa : 250
Rack travel in m: 10.75...10.95

3rd pressure hPa : -
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 162.0...166.0
1000 s: (159.0...169.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.25
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (121.0...149.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 02.94
 Test oil : ISO-4113
 Combination no. : 0 402 646 787
 Injection pump
 Pump designation : PE6P120A32OLS7858
 EP type number : 0 412 626 875
 Governor
 Governor design. : RQ300/1050PA1031-12
 Governor no. : 0 421 801 681
 Cust. part no. : 0240743102

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness : 8.00X2.50X1000
 x Length mm

(A) Injection pump setting values
 Irsp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0,75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 11.20...11.30
 Del.quantity cm3/ : 17.2...17.4
 100 s: (16.9...17.7)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300
 Rack travel in mm : 4.90...5.50
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108...110
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 172.0...174.0
 1000 : (169.0...177.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 87.0...95.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.25
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel min : 10.50...10.60

Measurement
Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.20...11.30
2nd pressure hPa : 250
Rack travel in m: 10.80...11.00
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700

Speed rpm : 550
Del.quantity cm³/ : 162.0...166.0
1000 s: (159.0...169.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm³/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.25
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 04.94
Test oil : ISO-4113

Combination no. : 0 402 646 789

Injection pump
Pump designation : PE6P120A32ULS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1031-10
Governor no. : 0 421 801 679

Cust. part no. : 0240740402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 103...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 350
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 400

1st pressure hPa : 800
Rack travel in m: 12.30...12.40
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

E01

Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:

:

Note remarks

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

RATED SPEED

1st version
Control lever
position degrees: 89.0...97.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 350
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 400

1st pressure hPa : 800
Rack travel in m: 12.30...12.40
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 265.0...295.0
1000 s: (261.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 793

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-8
Governor no. : 0 421 801 673

Cust. part no. : 0230749502

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.4...6.0

Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 201.0...203.0
1000 : (198.0...206.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 89.0...97.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 350
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 400

1st pressure hPa : 800
Rack travel in m: 12.30...12.40
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 793A

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-11
Governor no. : 0 421 801 728

Cust. part no. : 0230749502

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.4)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 89.0...97.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 350
Rack travel mm : 11.45...11.55

Measurement
Speed 1/min : 400

1st pressure hPa : 800
Rack travel in m: 12.30...12.40
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm³/ : 195.0...199.0
1000 s: (192.0...202.0)

Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm³/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.5...136.5
1000 s: (131.5...139.5)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 265.0...295.0
1000 s: (261.0...299.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 793A

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-8
Governor no. : 0 421 801 673

Cust. part no. : 0230749502

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

EOB

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 12.30...12.40
Del. quantity cm³/ : 20.1...20.3
100 s: (19.8...20.6)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 800
Del. quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 89.0...97.0

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.35
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 350
Rack travel mm : 11.45...11.55

Measurement

Speed 1/min : 400

1st pressure hPa : 800
Rack travel in m: 12.30...12.40
2nd pressure hPa : 200
Rack travel in m: 10.60...10.80
3rd pressure hPa : -
Rack travel in m: 10.10...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 195.0...199.0
1000 s: (192.0...202.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 134.5...136.5
1000 s: (131.5...139.5)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than:

full load rack tr: 11.35
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 02.94
 Test oil : ISO-4113

Combination no. : 0 402 646 795

Injection pump
 Pump designation : PE6P120A320LS7858-1
 EP type number : 0 412 626 911
 Governor
 Governor design. : RGV300...1050PA1033
 -8
 Governor no. : 0 421 814 027

Cust. part no. : 0230749002

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.52...0.92

2nd speed rpm : 575

travel mm : 4.27...4.77

3rd speed rpm : 625

travel mm : 4.72...5.22

4th speed rpm : 840

travel mm : 5.94...6.44

5th speed rpm : 1109

travel mm : 8.27...8.57

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170
Rack travel in mm : 8.80...11.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h : 700
Del.quantity : 172.0...174.0
1000 : (169.0...177.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117.0..125.0

Setting point:

Speed rpm : 1170
Rack travel in mm : 10.1

Testing:

1st rack travel in: 10.25
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 79...87
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:

Speed rpm : 200
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.20...11.30
2nd pressure hPa : 250
Rack travel in m: 10.80...11.00
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm³/ : 162.0...166.0
1000 s: (159.0...169.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm³/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.25
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (121.0...149.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 796

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1030-12
Governor no. : 0 421 801 729

Cust. part no. : 0230749302

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.9...5.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del.quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 88.0...96.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.75
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 800
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 400

1st pressure hPa : 350
Rack travel in m: 11.20...11.30
2nd pressure hPa : 200
Rack travel in m: 10.50...10.70
3rd pressure hPa : -
Rack travel in m: 9.60...9.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 550
Del.quantity cm3/ : 182.0...186.0
1000 s: (179.0...189.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.75
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : R0300/1050PA1030-13
Governor no. : 0 421 801 730

Cust. part no. : 0230748902

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.90...5.50
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 700
Del.quantity : 172.0...174.0
1000 : (169.0...177.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 87..0...95.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.25
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.45...10.65

Measurement

Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.20...11.30
2nd pressure hPa : 250
Rack travel in m: 10.80...11.00
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 162.0...166.0
1000 s: (159.0...169.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.25
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 265.0...295.0
1000 s: (261.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 797

Injection pump
Pump designation : PE6P120A320LS7858
EP type number : 0 412 626 875
Governor
Governor design. : RQ300/1050PA1030-4
Governor no. : 0 421 801 664

Cust. part no. : 0230748902

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 170.0...172.0

1000 : (167.0...175.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 87..0...95.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.15
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.45...10.65

Measurement
Speed 1/min : 400

1st pressure hPa : 700
Rack travel in m: 11.10...11.20
2nd pressure hPa : 250
Rack travel in m: 10.80...11.00
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 550
Del.quantity cm3/ : 160.0...164.0
1000 s: (157.0...167.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.15
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 40.0...70.0
1000 s: (36.0...74.0)
Rack travel in mm : 9.90...10.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 12.93
Test oil : ISO-4113

Combination no. : 0 402 646 916X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...1050PA797
-17

Governer no. : 0 421 813 884

Cust. part no. : 0200740302

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.15...13.25

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.11...1.41

2nd speed rpm : 637
travel mm : 4.93...5.43

3rd speed rpm : 830
travel mm : 6.02...6.52

4th speed rpm : 1107
travel mm : 8.28...8.68

5th speed rpm : 1218
travel mm : 9.75...10.25

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1125
Rack travel in mm : 14.90...17.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1400
Del.quantity : 201.5...203.5
1000 : (198.5...206.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 118...126

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Value only applies to initial setting of LDA spring.

Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 12.93
Test oil : ISO-4113

Combination no. : 0 402 646 940X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RG300/950PA971-9
Governor no. : 0 421 801 732

Cust. part no. : 0200742202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 683 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness : 8.00X2.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.15...13.25

Del.quantity cm³/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950

Aneroid pressure h: 1400

Del.quantity : 203.5...205.5

1000 : (200.5...208.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 92.0...100.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.20
Speed rpm : 950...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 400

1st pressure hPa : 200
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 350
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm3/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...235.0
1000 s: (201.0...239.0)
* Value only applies to initial setting
of LDA spring.
Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet	: MB
Edition	: 04.94
Replaces	: 06.92
Test oil	: ISO-4113
Combination no.	: 0 402 646 953X
Injection pump	
Pump designation	: PE6P120A320LS7836-10
EP type number	: 0 412 626 854
Governor	
Governor design.	: RQ300/950PA971-8
Governor no.	: 0 421 801 625

Cust. part no. : 0200742002

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 180.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

```
Prestroke mm      : 5.50...5.60
                   : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.65...12.75

Del.quantity cm3/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm³ : 0.5

100 s: (0.9)

```

2nd speed      rpm : 300
Rack travel in mm : 5.30...5.90
Del.quantity   cm3/ : 1.6...2.2
               100 s : (1.3...2.5)
Spread         cm3 : 0.6
               100 s : (1.0)

```

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

```

1st version
Speed      rpm      : 950
Aneroid pressure h: 1400
Del.quantity 1000 : (187.5...189.5)
Spread      cm3     : 5.00
              1000  : (9.00)

```

RATED SPEED

1st version
Control lever
position degrees: 92.0...100.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1100
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.95...11.05 *

Measurement
Speed 1/min : 400

1st pressure hPa : 1400
Rack travel in m: 12.65...12.75
2nd pressure hPa : -
Rack travel in m: 10.60...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 950
Del.quantity cm3/ : 187.5...189.5
1000 s: (184.5...192.5)
Spread cm3 : 5.00
1000 s: (9.0)
Aneroid pressure h: 1400

Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.30...10.60

* Value only applies to initial setting
of LDA spring.
Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 12.93
Test oil : ISO-4113

Combination no. : 0 402 646 958X

Injection pump
Pump designation : PE6P120A320LS7836-10
EP type number : 0 412 626 854
Governor
Governor design. : RQV300...950PA797-33
Governor no. : 0 421 813 958

Cust. part no. : 0200742102

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 180.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 33...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 638 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 12.65...12.75

Del.quantity cm³/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.30...5.90

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 780

travel mm : 6.10...6.60

3rd speed rpm : 1008

travel mm : 8.30...8.80

4th speed rpm : 1092

travel mm : 11.00...10.30

5th speed rpm : 1190

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 1400
Del.quantity : 187.5...189.5
1000 : (184.5...192.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack trave: 7.40
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 200
Rack travel mm : 10.95...11.05 *

Measurement

Speed 1/min : 400

1st pressure hPa : 1400
Rack travel in m: 12.65...12.75
2nd pressure hPa : -
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 186.0...190.0
1000 s: (183.0...193.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 200
Speed rpm : 400
Del.quantity cm3/ : 117.5...120.5
1000 s: (114.5...123.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 976

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : R9300/1050PA1031
Governor no. : 0 421 801 642

Cust. part no. : 0230740902

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del. quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 12.95...13.50
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

E27

Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1st rack travel less than

full load rack tr: 12.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...290.0
1000 s: (266.0...294.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 04.94
 Replaces : 02.94
 Test oil : ISO-4113
 Combination no. : 0 402 646 977
 Injection pump
 Pump designation : PE6P120A320LS7846
 EP type number : 0 412 626 865
 Governor
 Governor design. : RQ300/1G50PA1030-1
 Governor no. : 0 421 801 641

Cust. part no. : 0230741002

Customer spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del. quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 67.0...75.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 12.95...13.05
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.20...10.50

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 977

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/1050PA1030-14
Governor no. : 0 421 801 731

Cust. part no. : 0230741002

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kw : 230.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.95...13.05
Del.quantity cm³/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.90...5.50
Del.quantity cm³/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1000
Del.quantity : 230.0...232.0
1000 : (227.0...235.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 67.0...75.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 12.95...13.05
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 226.0...230.0
1000 s: (223.0...233.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 265.0...295.0
1000 s: (261.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 646 979

Injection pump
Pump designation : PE6P120A320LS7846
EP type number : 0 412 626 865
Governor
Governor design. : RQ300/950PA1032-9
Governor no. : 0 421 801 733

Cust. part no. : 0150745602

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.95...13.05

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 66.0...74.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 12.95...13.05
2nd pressure hPa : 300
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 227.0...231.0
1000 s: (224.0...234.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 189.5...192.5
1000 s: (186.5...195.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 131.0...133.0
1000 s: (128.0...136.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 265.0...295.0
1000 s: (261.0...299.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 402 648 817A

Injection pump
Pump designation : PE8P120A320LS7801-10
EP type number : 0 412 628 806
Governor
Governor design. : RQ300/1050PA762-16
Governor no. : 0 421 801 620

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 285.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.85...12.95

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300
Rack travel in mm : 5.90...6.50
Del.quantity cm3/ : 1.3...1.9
100 s: (1.0...2.2)
Spread cm3 : 0.5
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 1050
Del.quantity : 171.0...173.0
1000 : (168.0...176.0)
Spread cm3 : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.70
Speed rpm : 1095...1111
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 12.50...12.70
3rd speed rpm : 500
Rack travel in m: 12.85...12.95

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.35...11.65

Measurement
Speed 1/min : 500

1st pressure hPa : 220
Rack travel in m: 11.75...11.85
2nd pressure hPa : 300
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1050
Speed rpm : 1050

Del.quantity cm3/ : 175.5...178.5
1000 s: (172.5...181.5)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1095...1111

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 900X

Injection pump
Pump designation : PE8P120A320LS7840-10
EP type number : 0 412 628 856
Governor
Governor design. : RQ300/1050PA972-4
Governor no. : 0 421 801 560

Cust. part no. : 0190749802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 750

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 97.0...105.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.90
2nd speed rpm : 900
Rack travel in m: 12.90...13.10
3rd speed rpm : 700
Rack travel in m: 13.40...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 400
Rack travel mm : 12.35...12.45

Measurement
Speed 1/min : 400

1st pressure hPa : 750
Rack travel in m: 13.40...13.50
2nd pressure hPa : 200
Rack travel in m: 11.50...11.70
3rd pressure hPa : -

F09

Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750
Speed rpm : 1050
Del.quantity cm3/ : 192.0...196.0
1000 s: (189.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 400
Speed rpm : 400
Del.quantity cm3/ : 156.5...159.5
1000 s: (153.5...162.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1106

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 648 917

Injection pump
Pump designation : PE8P120A320LS7839-10
EP type number : 0 412 628 855
Governor
Governor design. : RQ300/1050PA993-3
Governor no. : 0 421 801 601

Cust. part no. : 0210740202

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F10

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 15.10...15.30

Del. quantity cm³/ : 26.5...26.7

100 s: (26.2...27.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 6.00...6.60
Del. quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 900
Del. quantity : 265.0...267.0
1000 : (262.0...270.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 100.0...108.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 15.90...16.10
3rd speed rpm : 800
Rack travel in m: 16.25...16.45

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 550

1st pressure hPa : 550
Rack travel in m: 12.95...13.15
2nd pressure hPa : 250
Rack travel in m: 10.25...10.55
3rd pressure hPa : 1100
Rack travel in m: 15.25...15.55
4th pressure hPa : 1300
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 9.00...9.30 *

START CUT-OUT

Speed 1/min : 220 (240)

F11

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 1050
Del.quantity cm3/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/ : 283.0...287.0
1000 s: (280.0...290.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 203.0...206.0
1000 s: (200.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

: * N = 500 1/MIN

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.95
Test oil : ISO-4113

Combination no. : 0 402 648 926

Injection pump
Pump designation : PE8P120A320LS7840
EP type number : 0 412 628 850
Governor
Governor design. : RQ300/1050PA972-11
Governor no. : 0 421 801 739

Cust. part no. : 0220747002

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.50...12.70

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.8

100 s: (1.1)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 8.00

1000 : (11.00)

RATED SPEED

1st version
Control lever
position degrees: 92.0...100.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.90...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 11.45...11.55
2nd pressure hPa : 400
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (11.0)

Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 193.0...197.0
1000 s: (190.0...200.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 926K

Injection pump
Pump designation : PE8P120A320LS7840
EP type number : 0 412 628 850
Governor
Governor design. : RQ300/1050PA972-9
Governor no. : 0 421 801 632

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.55...12.65

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del.quantity : 193.0...195.0

1000 : (190.0...198.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.60
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control Lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 11.55...11.65
3rd pressure hPa : 400
Rack travel in m: 12.45...12.65
4th pressure hPa : -
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 6.00
1000 s: (9.0)
Aneroid pressure h: 1000
Speed rpm : 800

Del.quantity cm3/ : 190.0...194.0
1000 s: (187.0...197.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1106

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 927K

Injection pump
Pump designation : PE8P120A320LS7840
EP type number : 0 412 628 850
Governor
Governor design. : RQV300...1050PA797
-36
Governor no. : 0 421 813 984

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.55...12.65

Del.quantity cm3/ : 19.3...19.5

100 s: (19.0...19.8)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 600

Rack travel in mm : 4.20...4.80

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump
with governor

GUIDE SLEFVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.60

2nd speed rpm : 470
travel mm : 3.00...3.50

3rd speed rpm : 830
travel mm : 5.90...6.40

4th speed rpm : 1110
travel mm : 8.20...8.70

5th speed rpm : 1183
travel mm : 9.60...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1000
Del.quantity : 193.0...195.0
1000 : (190.0...198.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Control Lever
position degrees: 118...126

Testing:

1st rack travel in: 11.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 82...90
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.50

Testing:

Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 11.55...11.65
2nd pressure hPa : 400
Rack travel in m: 12.45...12.65
4th pressure hPa : -

F17

Rack travel in m: 11.00...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 6.00
1000 s: (9.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 190.0...194.0
1000 s: (187.0...197.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/1050PA1030-19
Governor no. : 0 421 801 748

Cust. part no. : 0230741202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F18

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 775
Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.90...10.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 928

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/105CPA1030-9
Governor no. : 0 421 801 717

Cust. part no. : 0230741202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F20

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)

Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 775
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm³/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.30...11.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 9288

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/1050PA1030-9
Governor no. : 0 421 801 717

Customer part no. : 0230741202

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 660 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F22

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del. quantity cm³/ : 23.8...24.0

100 s : (23.5...24.3)

Spread cm³ : 0.6

100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del. quantity cm³/ : 1.0...1.6
100 s : (0.7...1.9)
Spread cm³ : 0.6
100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del. quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 775
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm³/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.80...10.80

Remarks:

;

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 928C

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/1050PA1030-9
Governor no. : 0 421 801 717

Cust. part no. : 0230741202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

F24

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 14.75...14.85
Del. quantity cm3/ : 23.8...24.0
100 s: (23.5...24.3)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del. quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del. quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 775
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.80...10.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 929

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQV300...950PA1033-1
2

Governer no. : 0 421 814 093

Cust. part no. : 0230741402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.44...1.64
2nd speed rpm : 589
travel mm : 4.72...5.22
3rd speed rpm : 790
travel mm : 6.23...6.73
4th speed rpm : 1009
travel mm : 8.32...8.72

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1045
Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 64.0...72.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:
Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.95...14.15
2nd speed rpm : 900
Rack travel in m: 14.00...14.20
3rd speed rpm : 875
Rack travel in m: 14.15...14.35
4th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

F27

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (176.0...224.0)
Rack travel in mm : 15.05...15.25

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 929B

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RGV300...950PA1033-1
2

Governor no. : 0 421 814 093

Cust. part no. : 0230741402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del. quantity cm³/ : 23.8...24.0

100 s : (23.5...24.3)

Spread cm³ : 0.6

100 s : (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del. quantity cm³/ : 1.0...1.6

100 s : (0.7...1.9)

Spread cm³ : 0.8

100 s : (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.24...1.74

2nd speed rpm : 589
travel mm : 4.72...5.22

3rd speed rpm : 790
travel mm : 6.23...6.73

4th speed rpm : 1012
travel mm : 8.31...8.81

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1045

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 64.0...72.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.95...14.15
2nd speed rpm : 900
Rack travel in m: 14.00...14.20
3rd speed rpm : 875
Rack travel in m: 14.15...14.35
4th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement

601

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm³/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm³/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...220.0
1000 s: (176.0...224.0)
Rack travel in mm : 15.05...15.55

Remarks:

:

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 643 930

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/1050PA1031-13
Governor no. : 0 421 801 719

Cust. part no. : 0230741502

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G02

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)
Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 14.75...14.85
Del.quantity cm3/ : 23.8...24.0
100 s: (23.5...24.3)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control Lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 775
Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...290.0
1000 s: (246.0...294.0)

Remarks:

:

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

Note remarks

TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.50...5.60
                   : (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order      : 8- 7- 2- 6- 3- 5-
                   : 4- 1
```

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm³/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm³ : 0.6

100 s: (0.9)

```

2nd speed      rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity   cm3/ : 1.0...1.6
               100 s: (0.7...1.9)
Spread         cm3 : 0.8
               100 s: (1.0)

```

Control-lever position
Degree: 108...110

Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

```

1st version
Speed      rpm      : 550
Aneroid pressure h: 1200
Del.quantity      : 238.0...240.0
                1000 : (235.0...243.0)
Spread      cm3     : 6.00
                1000 : (9.00)

```

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.0
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 900
Rack travel in m: 14.00...14.20
4th speed rpm : 875
Rack travel in m: 14.15...14.35
5th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement
Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

* Value only applies to initial setting
of LDA spring.
Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 11.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/950PA1032-7
Governor no. : 0 421 801 705

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.4...6.0
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.8
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.64...1.84
2nd speed rpm : 415
travel mm : 3.72...3.92
3rd speed rpm : 550
travel mm : 5.9...6.1
4th speed rpm : 1005
travel mm : 6.74...6.94

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200

Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.0
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 950
Rack travel in m: 13.9...14.1
3rd speed rpm : 900
Rack travel in m: 14.0...14.2
4th speed rpm : 875
Rack travel in m: 14.15...14.35
5th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 1200
Rack travel mm : 14.75...14.85

Measurement

Speed 1/min : 400

1st pressure hPa : 450
Rack travel in m: 12.8...13.0
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.0
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.3...11.3

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.4...5.600
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 6.00
1000 s: (10.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 11.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 931

Injection pump
Pump designation : PE8P120A320LS7847-2
EP type number : 0 412 628 885
Governor
Governor design. : RQ300/950PA1032-7
Governor no. : 0 421 801 705

Cust. part no. : 0230741302

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.4...6.0

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.64...1.84

2nd speed rpm : 415

travel mm : 3.72...3.92

3rd speed rpm : 550

travel mm : 5.9...6.1

4th speed rpm : 1005

travel mm : 6.74...6.94

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200
Del.quantity : 238.0...240.0
1000 : (235.0...243.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.0
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 950
Rack travel in m: 13.9...14.1
3rd speed rpm : 900
Rack travel in m: 14.0...14.2
4th speed rpm : 875
Rack travel in m: 14.15...14.35
5th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 1200
Rack travel mm : 14.75...14.85

Measurement

Speed 1/min : 400

G09

1st pressure hPa : 450
Rack travel in m: 12.8...13.0
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.0
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.3...11.3

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.4...5.600
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 6.00
1000 s: (10.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 931B

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/950PA1032-7
Governor no. : 0 421 801 715

Cust. part no. : 0230741302

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.75...14.85

Del.quantity cm³/ : 23.8...24.0
100 s: (23.5...24.3)

Spread cm³ : 0.6
100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm³/ : 1.0...1.6
100 s: (0.7...1.9)

Spread cm³ : 0.8
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200

Del.quantity : 238.0...240.0
1000 : (235.0...243.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.0
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 900
Rack travel in m: 14.00...14.20
4th speed rpm : 875
Rack travel in m: 14.15...14.35
5th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement
Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.90...10.90

* Value only applies to initial setting
of LDA spring.
Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.0
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.75...14.85
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 900
Rack travel in m: 14.00...14.20
4th speed rpm : 875
Rack travel in m: 14.15...14.35
5th speed rpm : 800
Rack travel in m: 14.65...14.85

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement
Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.75...14.85

2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.90...10.90

* Value only applies to initial setting
of LDA spring. :
Ultimate setting of the LDA spring is
performed by way of the appropriate
setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 938

Injection pump
Pump designation : PE8P120A320LS7840-10
EP type number : 0 412 628 856
Governor
Governor design. : RQ300/1050PA1030-15
Governor no. : 0 421 801 736

Cust. part no. : 0230743602

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness : 8.00X2.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del. quantity cm3/ : 21.1...21.3
100 s : (20.8...21.6)

Spread cm3 : 0.6
100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 6.20...6.80
Del. quantity cm3/ : 1.0...1.6
100 s : (0.7...1.9)
Spread cm3 : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 750
Del. quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 91.0...99.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.90
2nd speed rpm : 900
Rack travel in m: 12.95...13.05
3rd speed rpm : 800
Rack travel in m: 13.40...13.50
4th speed rpm : 700
Rack travel in m: 13.40...13.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 400
Rack travel mm : 12.35...12.45

Measurement

Speed 1/min : 400

1st pressure hPa : 750
Rack travel in m: 13.40...13.50
2nd pressure hPa : 200
Rack travel in m: 11.50...11.70
3rd pressure hPa : -
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 1050
Del.quantity cm3/ : 192.0...196.0
1000 s: (189.0...199.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 400
Speed rpm : 400
Del.quantity cm3/ : 156.5...159.5
1000 s: (153.5...162.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : R0300/950PA1032-11
Governor no. : 0 421 801 737

Cust. part no. : 0240740602

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G16

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 14.35...14.45
Del. quantity cm3/ : 22.5...22.7
100 s : (22.2...23.0)
Spread cm3 : 0.6
100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del. quantity cm3/ : 1.0...1.6
100 s : (0.7...1.9)
Spread cm3 : 0.6
100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 825
Rack travel in m: 14.35...14.45

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

G17

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 940

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/950PA1032-8
Governor no. : 0 421 801 723

Cust. part no. : 0240740602

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G18

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.95...14.05

Del. quantity cm3/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.00...5.60
Del. quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 66.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.95...14.05
2nd speed rpm : 950
Rack travel in m: 13.50...13.70
3rd speed rpm : 825
Rack travel in m: 13.95...14.05

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.30...12.50

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 13.95...14.05
2nd pressure hPa : 300
Rack travel in m: 11.25...11.55
3rd pressure hPa : -
Rack travel in m: 9.85...10.15

FUEL DELIVERY CHARACTERISTICS

1st version

G19

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 45.0...75.0
1000 s: (41.0...79.0)
Rack travel in mm : 9.80...10.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 940B

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 883
Governor
Governor design. : RQ300/950PA1032-8
Governor no. : 0 421 801 723

Cust. part no. : 0240740602

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G20

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7

100 s : (22.2...23.0)

Spread cm3 : 0.6

100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s : (0.7...1.9)
Spread cm3 : 0.6
100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 825
Rack travel in m: 14.35...14.45

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

G21

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.90...10.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 02.94
 Test oil : ISO-4113

Combination no. : 0 402 648 941

Injection pump
 Pump designation : PE8P120A320LS7847-3
 EP type number : 0 412 628 886
 Governor
 Governor design. : RGV300...95GPA1033-1
 3
 Governor no. : 0 421 814 094

Cust. part no. : 0240742202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
 Rack travel in mm : 5.40...6.00
 Del.quantity cm3/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm3 : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.34...1.64
 2nd speed rpm : 589
 travel mm : 4.72...5.22
 3rd speed rpm : 790
 travel mm : 5.23...6.73
 4th speed rpm : 1009
 travel mm : 8.32...8.72
 5th speed rpm : 1210
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117.0...125.0

Testing:

1st rack travel in: 13.00
Speed rpm : 993...1003
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 82.0...90.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:

Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 950
Rack travel in m: 13.90...14.10
3rd speed rpm : 825
Rack travel in m: 14.35...14.45

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00 *

Measurement

G23

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.25...10.55

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 993...1003

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 02.94
 Test oil : ISO-4113

Combination no. : 0 402 648 942

Injection pump
 Pump designation : PE8P120A320LS7847-3
 EP type number : 0 412 628 886
 Governor
 Governor design. : R0300/950PA1031-16
 Governor no. : 0 421 801 722

Cust. part no. : 0240742302

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 93.0...101.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.00
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:
Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.90...14.10
2nd speed rpm : 825
Rack travel in m: 14.35...14.45
3rd speed rpm : 550
Rack travel in m: 14.35...14.45

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement
Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 13.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -

G25

Rack travel in m: 10.25...10.55

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 950
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 107.0...109.0
1000 s: (104.0...112.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/1050PA1030-10
Governor no. : 0 421 801 718

Cust. part no. : 0230747802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kw : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
Inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G26

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 13.95...14.05

Del. quantity cm3/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.00...5.60
Del. quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.30

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.95...14.05
2nd speed rpm : 1050
Rack travel in m: 13.50...13.70
3rd speed rpm : 950
Rack travel in m: 13.70...13.90
4th speed rpm : 800
Rack travel in m: 13.95...14.05

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.30...12.50

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 13.95...14.05
2nd pressure hPa : 300
Rack travel in m: 11.25...11.55
3rd pressure hPa : -
Rack travel in m: 9.55...9.85

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...80.0
1000 s: (46.0...84.0)
Rack travel in mm : 10.00...11.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 945

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/1050PA1030-16
Governor no. : 0 421 801 738

Cust. part no. : 0230747802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

G28

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1200

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control Lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.40

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 800
Rack travel in m: 14.35...14.45

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 945B

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 886
Governor
Governor design. : RQ300/1050PA1030-10
Governor no. : 0 421 801 718

Cust. part no. : 0230747802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

H02

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 14.35...14.45

Del.quantity cm3/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 68.0...76.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.40

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 800
Rack travel in m: 14.35...14.45

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

H03

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 9.80...10.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 946

Injection pump
Pump designation : PE8P120A320LS7847-3
EP type number : 0 412 628 836
Governor
Governor design. : RQ300/1050PA1031-15
Governor no. : 0 421 801 721

Cust. part no. : 0230747902

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 LA

1st version kW : 280.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

H04

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 14.35...14.45
Del.quantity cm3/ : 22.5...22.7
100 s: (22.2...23.0)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.0...1.6
100 s: (0.7...1.9)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1200
Del.quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 300
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 14.35...14.45
2nd speed rpm : 1050
Rack travel in m: 13.95...14.15
3rd speed rpm : 950
Rack travel in m: 14.10...14.30
4th speed rpm : 800
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 450
Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : 1200
Rack travel in m: 14.35...14.45
2nd pressure hPa : 300
Rack travel in m: 11.75...12.05
3rd pressure hPa : -
Rack travel in m: 10.15...10.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 450
Speed rpm : 400
Del.quantity cm3/ : 164.5...167.5
1000 s: (161.5...170.5)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 104.0...106.0
1000 s: (101.0...109.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)
Rack travel in mm : 10.00...11.00

Remarks:

:

APPLICATION

Omnibus

Note remarks

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

RATED SPEED

1st version
Control lever
position degrees: 94.0...102.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.75
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 13.05...13.15

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 13.70...13.80
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)

H07

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 207.0...210.0
1000 s: (204.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.75
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 255.0...285.0
1000 s: (251.0...289.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 10.93
 Test oil : ISO-4113

Combination no. : 0 402 648 947

Injection pump
 Pump designation : PE8P120A320LS7859
 EP type number : 0 412 628 869
 Governor
 Governor design. : RQ300/950FA1032-5
 Governor no. : 0 421 801 668

Cust. part no. : 0230749602

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness : 8.00X2.50X1000
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 24.4...24.6
 100 s: (24.1...24.9)

Spread cm3 : 0.6
 100 s: (0.9)

2nd speed rpm : 300
 Rack travel in mm : 4.90...5.50
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm3 : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108...110
 Speed rpm : 600
 Rack travel in mm : 19.20...20.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 1000
 Del.quantity : 244.0...246.0
 1000 : (241.0...249.0)
 Spread cm3 : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 94.0...102.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.75
Speed rpm : 990...1006
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 13.05...13.15

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 13.70...13.80
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 207.0...210.0
1000 s: (204.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.75
Speed rpm : 990...1006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...95.0
1000 s: (61.0...99.0)
Rack travel in mm : 9.40...9.80

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump
Pump designation : PE8P120A320LS7859
EP type number : 0 412 628 869
Governor
Governor design. : RQ300/1050PA1030-17
Governor no. : 0 421 801 742

Cust. part no. : 0230749802

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 24.4...24.6
100 s: (24.1...24.9)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 4.90...5.50
Del. quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1000
Del. quantity : 244.0...246.0
1000 : (241.0...249.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 94.0...102.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.60
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.70...13.80
2nd speed rpm : 1050
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 13.05...13.15

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 13.60...13.70
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 207.0...210.0
1000 s: (204.0...213.0)
Aneroid pressure h: --
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 255.0...285.0
1000 s: (251.0...289.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 10.93
Test oil : ISO-4113

Combination no. : 0 402 648 948

Injection pump
Pump designation : PE8P120A320LS7859
EP type number : 0 412 628 869
Governor
Governor design. : RQ300/1050PA1030-7
Governor no. : 0 421 801 669

Cust. part no. : 0230749802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness : 8.00X2.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 4.90...5.50

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 1000

Del. quantity : 244.0...246.0

1000 : (241.0...249.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 94.0...102.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.60
Speed rpm : 1090...1106
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL
Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 550
Rack travel in m: 13.70...13.80
2nd speed rpm : 1050
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 13.05...13.15

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 13.60...13.70
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10
3rd pressure hPa : -
Rack travel in m: 9.45...9.75

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm3/ : 228.0...232.0
1000 s: (225.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del.quantity cm3/ : 207.0...210.0
1000 s: (204.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...95.0
1000 s: (61.0...99.0)
Rack travel in mm : 9.40...9.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 11.93
 Test oil : ISO-4113
 Combination no. : 0 402 648 949
 Injection pump
 Pump designation : PE8P120A320LS7863
 EP type number : 0 412 628 874
 Governor
 Governor design. : RQV300...950PA1050
 -2K
 Governor no. : 0 421 815 381
 Cust. part no. : 0243740002

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 95...115

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 14.00...15.00
 Firing order : 8- 7- 2- 6- 3- 5-
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 14.75...14.85

Del.quantity cm³/ : 28.1...28.3
 100 s: (27.8...28.6)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300
 Rack travel in mm : 5.40...6.00
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.38...1.88
 2nd speed rpm : 350
 travel mm : 2.31...2.81
 3rd speed rpm : 510
 travel mm : 3.27...3.77
 4th speed rpm : 790
 travel mm : 4.75...5.25
 5th speed rpm : 1006
 travel mm : 7.25...7.75

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1160
Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del. quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 14.75...14.85
2nd speed rpm : 750
Rack travel in m: 14.40...14.60
3rd speed rpm : 700
Rack travel in m: 14.10...14.30
4th speed rpm : 650
Rack travel in m: 13.90...14.10
5th speed rpm : 550
Rack travel in m: 13.85...14.05

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 850
Pressure hPa : 500
Rack travel mm : 12.10...12.30

Measurement

Speed 1/min : 850

1st pressure hPa : 1200
Rack travel in m: 14.95...15.05
2nd pressure hPa : 150
Rack travel in m: 8.60...9.00
3rd pressure hPa : -
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm3/ : 275.0...279.0
1000 s: (272.0...282.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 550
Del. quantity cm3/ : 265.0...271.0
1000 s: (262.0...274.0)
Spread cm3 : 8.0
1000 s: (12.0)
Aneroid pressure h: 500
Speed rpm : 400
Del. quantity cm3/ : 194.5...197.5
1000 s: (191.5...200.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (116.0...144.0)
Rack travel in mm : 11.40...12.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.94
 Replaces : 10.93
 Test oil : ISO-4113

Combination no. : 0 402 648 953

Injection pump
 Pump designation : PE8P120A320LS7859
 EP type number : 0 412 628 869
 Governor
 Governor design. : RQV300...950PA1033
 -10
 Governor no. : 0 421 814 040

Cust. part no. : 0230749702

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 24.4...24.6
 100 s: (24.1...24.9)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300
 Rack travel in mm : 4.90...5.50
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.09...1.49
 2nd speed rpm : 567
 travel mm : 4.41...4.91
 3rd speed rpm : 617
 travel mm : 4.98...5.48
 4th speed rpm : 780
 travel mm : 6.06...6.56
 5th speed rpm : 1009
 travel mm : 8.40...8.70

GUIDE SLEEVE POSITION
 Control-lever position

Degree: -1
Speed rpm : 1050
Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 550
Aneroid pressure h: 1000
Del. quantity : 244.0...246.0
1000 : (241.0...249.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.75
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 380...420

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 400
Pressure hPa : 550
Rack travel mm : 13.05...13.15

Measurement
Speed 1/min : 400

1st pressure hPa : 1000
Rack travel in m: 13.70...13.80
2nd pressure hPa : 250
Rack travel in m: 10.90...11.10

3rd pressure hPa : -
Rack travel in m: 9.45...9.75

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del. quantity cm3/ : 233.0...237.0
1000 s: (230.0...240.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 550
Speed rpm : 400
Del. quantity cm3/ : 207.0...210.0
1000 s: (204.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.75
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 648 957

Injection pump
Pump designation : PE8P12DA320LS7863
EP type number : 0 412 628 874
Governor
Governor design. : RGV300...950PA1056-2
K
Governor no. : 0 421 815 382

Cust. part no. : 0240743202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 95...115

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 14.00...15.00
Firing order : 8- 7- 2- 6- 3- 5-
Firing order : 4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950
Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 28.1...28.3
100 s: (27.8...28.6)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.48...1.78
2nd speed rpm : 350
travel mm : 2.31...2.81
3rd speed rpm : 400
travel mm : 2.85...3.35
4th speed rpm : 790
travel mm : 4.75...5.25
5th speed rpm : 1006
travel mm : 7.30...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1160
Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 107.0...115.0

Testing:
1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 14.75...14.85
2nd speed rpm : 850
Rack travel in m: 14.90...15.10
3rd speed rpm : 750
Rack travel in m: 14.45...14.55
4th speed rpm : 650
Rack travel in m: 13.90...14.10
5th speed rpm : 550
Rack travel in m: 13.85...14.05

Aneroid/Altitude
Compensator Test

H2O

1st version
Setting
Speed rpm : 850
Pressure hPa : 500
Rack travel mm : 12.00...12.20

Measurement
Speed 1/min : 850

1st pressure hPa : 1200
Rack travel in m: 14.90...15.10
2nd pressure hPa : 150
Rack travel in m: 8.60...9.00
3rd pressure hPa : -
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 275.0...279.0
1000 s: (272.0...282.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm³/ : 265.0...271.0
1000 s: (262.0...274.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 500
Speed rpm : 400
Del.quantity cm³/ : 192.5...195.5
1000 s: (189.5...198.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (116.0...144.0)
Rack travel in mm : 11.40...12.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 970

Injection pump
Pump designation : PE8P120A320LS7863
EP type number : 0 412 628 874
Governor
Governor design. : RQV300...950PA1108K
Governor no. : 0 421 815 369

Cust. part no. : 0240748402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

H22

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 14.00...15.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 14.75...14.85

Del.quantity cm3/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.40...6.00

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.37...1.67

2nd speed rpm : 318
travel mm : 1.55...2.05

3rd speed rpm : 368
travel mm : 2.25...2.75

4th speed rpm : 730
travel mm : 5.94...6.46

5th speed rpm : 1008
travel mm : 9.63...10.03

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 12.50...15.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117.0...125.0

Testing:
1st rack travel in: 13.80
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 70.0...78.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.20

Testing:
Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 14.75...14.85
2nd speed rpm : 850
Rack travel in m: 14.90...15.10
3rd speed rpm : 750
Rack travel in m: 14.40...14.60
4th speed rpm : 650
Rack travel in m: 13.90...14.10
5th speed rpm : 550
Rack travel in m: 13.85...14.05

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 850
Pressure hPa : 500

H23

Rack travel mm : 12.00...12.20

Measurement
Speed 1/min : 850

1st pressure hPa : 1200
Rack travel in m: 14.90...15.10
2nd pressure hPa : 150
Rack travel in m: 8.60...9.00
3rd pressure hPa : -
Rack travel in m: 7.80...8.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 275.0...279.0
1000 s: (272.0...282.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 550
Del.quantity cm³/ : 265.0...271.0
1000 s: (262.0...274.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 500
Speed rpm : 400
Del.quantity cm³/ : 192.5...195.5
1000 s: (189.5...198.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...140.0
1000 s: (116.0...144.0)
Rack travel in mm : 11.40...12.20

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 04.94
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 975
 Injection pump
 Pump designation : PE8P120A320LS7840-1
 EP type number : 0 412 628 862
 Governor
 Governor design. : RGV350...950PA1123
 Governor no. : 0 421 814 085
 Cust. part no. : 0230747102
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM442 A
 1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 80...100
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 950
 Rack travel in mm : 13.25...13.35
 Del.quantity cm3/ : 21.0...21.2
 100 s: (20.7...21.5)
 Spread cm3 : 0.6
 100 s: (0.9)
 2nd speed rpm : 350
 Rack travel in mm : 5.40...6.00
 Del.quantity cm3/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.63...1.93
 2nd speed rpm : 370
 travel mm : 1.75...2.25
 3rd speed rpm : 420
 travel mm : 2.29...2.79
 4th speed rpm : 995
 travel mm : 9.21...9.61
 5th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1
Speed rpm : 1090
Rack travel in mm : 11.00...13.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 1200
Del.quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98.0...106.0

Testing:

1st rack travel in: 12.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65.0...73.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 250
Minimum rack trave: 9.10
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 370...490

Aneroid/Altitude Compensator Test

1st version

Measurement

Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 12.80...13.00
2nd pressure hPa : 350
Rack travel in m: 11.45...11.55
3rd pressure hPa : -
Rack travel in m: 11.95...11.25

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 208.0...212.0
1000 s: (205.0...215.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...225.0
1000 s: (191.0...229.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 402 678 820

Injection pump
Pump designation : PE8P120A320LS7823-1
EP type number : 0 412 628 872
Governor
Governor design. : RSV350...1050POA535
-9

Governor no. : 0 421 833 393

Cust. part no. : 0240742402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 362.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350
Rack travel in mm : 4.80...5.40
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.4)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 90.0...98.0

Testing:
1st rack travel in: 13.40
Speed rpm : 1070...1079
2nd rack travel in: 4.00
Speed rpm : 1135...1152
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 64.0...72.0
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 360...420

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 14.40...14.60
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 700
Rack travel in m: 15.40...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.40
2nd pressure hPa : 1050
Rack travel in m: 13.90...14.00
3rd pressure hPa : 500
Rack travel in m: 12.85...13.05
4th pressure hPa : 1250
Rack travel in m: 14.75...14.95

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 1030
Del.quantity cm³/ : 253.0...256.0
1000 s: (250.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 271.0...274.0
1000 s: (268.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 141.0...143.0
1000 s: (138.0...146.0)
Spread cm³ : 8.00
1000 s: (-)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1070...1079

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.94
Test oil : ISO-4113

Combination no. : 0 402 678 823

Injection pump
Pump designation : PE8P120A320LS7801-2
EP type number : 0 412 628 825
Governor
Governor design. : RSV550...850POA574
Governor no. : 0 421 833 430

Customer-spec. information
Customer : MB

Engine : OM442LA

1st version kW : 302.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (4.65...5.85)

Rack travel in mm : 20.00...21.00

JO1

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 15.30...15.40

Del.quantity cm3/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 550

Rack travel in mm : 4.30...4.90

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 830

Aneroid pressure h: 1000

Del.quantity : 230.0...232.0

1000 : (227.0...235.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 82.0...90.0

Testing:

1st rack travel in: 14.35

Speed rpm : 890...895

2nd rack travel in: 4.00

Speed rpm : 955...968

4th rack travel in: 1050

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 70.0...78.0

Setting point w/out bumper spring

Speed rpm : 550

Rack travel in mm : 4.60

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 550

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00

Speed rpm : 550...610

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 15.30...15.40

Measurement

Speed 1/min : 500

1st pressure hPa : 450

Rack travel in m: 14.45...14.55

2nd pressure hPa : 250

Rack travel in m: 12.50...12.70

3rd pressure hPa : -

Rack travel in m: 11.35...11.65

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 830

Del.quantity cm3/ : 230.0...232.0

1000 s: (227.0...235.0)

Spread cm3 : 6.00

1000 s: (9.0)

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/ : 232.0...238.0

1000 s: (229.0...241.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.35

Speed rpm : 890...895

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 550

Rack travel in mm : 4.30...4.90

Del.quantity cm3/ : 14.0...20.0

1000 s: (11.0...23.0)

Spread cm3 : 6.00

1000 s: (10.0)

Remarks:

:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 825

Injection pump
Pump designation : PE8P120A320LS7823-2
EP type number : 0 412 628 883
Governor
Governor design. : RSV450...1050POA541-1
Governor no. : 0 421 833 444

Cust. part no. : 0250744202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442LA

1st version kW : 362.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.85...14.95

Del. quantity cm³/ : 25.4...25.6
100 s : (25.1...25.9)

Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 450
Rack travel in mm : 4.30...4.90
Del. quantity cm³/ : 1.5...2.1
100 s : (1.2...2.4)
Spread cm³ : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1030
Aneroid pressure h: 1600
Del. quantity : 254.0...256.0
1000 : (251.0...259.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 86.0...94.0

Testing:

1st rack travel in: 13.90
Speed rpm : 1070...1075
2nd rack travel in: 4.00
Speed rpm : 1115...1128
4th rack travel in: 14.00
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65.0...73.0
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 445...505

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030
Rack travel in m: 14.85...14.95
2nd speed rpm : 950
Rack travel in m: 14.95...15.05
3rd speed rpm : 750
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.45...10.75
2nd pressure hPa : 400
Rack travel in m: 11.30...11.40
3rd pressure hPa : 700
Rack travel in m: 14.05...14.25
4th pressure hPa : 1600
Rack travel in m: 15.30...15.50

FUEL DELIVERY CHARACTERISTICS

1st version

J04

Aneroid pressure h: 1600
Speed rpm : 750
Del.quantity cm3/ : 254.0...256.0
1000 s: (251.0...259.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1070...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 402 746 913

Injection pump
Pump designation : PES6P120A720LS7237-1
1

EP type number : 0 412 726 911
Governor
Governor design. : RQ300/1100PA1008-2
Governor no. : 0 421 801 713

Cust. part no. : 0200747802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.65...13.75

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.60...6.20
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1400
Del.quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 340...380

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.95...12.25

Measurement

Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.60...12.70
2nd pressure hPa : 800
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100
Del.quantity cm3/ : 198.0...200.0
1000 s: (195.0...203.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...90.0
1000 s: (66.0...94.0)
Rack travel in mm : 11.90...12.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 10.92
Test oil : ISO-4113

Combination no. : 0 402 746 913X

Injection pump
Pump designation : PES6P120A720LS7237
-10

EP type number : 0 412 726 872
Governor
Governor design. : RQ300/1100PA1008-1
Governor no. : 0 421 801 592

Cust. part no. : 0200747802

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.65...13.75
Del. quantity cm³/ : 19.8...20.0
100 s : (19.5...20.3)
Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 6.20...6.80
Del. quantity cm³/ : 1.6...2.2
100 s : (1.3...2.5)
Spread cm³ : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1400
Del. quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.65...12.75
2nd pressure hPa : 800
Rack travel in m: 12.95...13.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (56.0...84.0)
Rack travel in mm : 11.80...12.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 914

Injection pump
Pump designation : PES6P120A720LS7238-1
EP type number : 0 412 726 873
Governor
Governor design. : RQ300/1100PA1008-4
Governor no. : 0 421 801 745

Cust. part no. : 0200748002

Customer-spec. information
Customer : MB-NFZ

Engine : OM447 hLA

1st version kW : 220.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.75...13.85

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 94.0...102.0

Setting point:

Speed rpm : 650
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 6.20...6.80
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 13.75...13.85

Measurement

Speed 1/min : 600

1st pressure hPa : 150
Rack travel in m: 11.65...11.75
2nd pressure hPa : 350
Rack travel in m: 13.10...13.30
3rd pressure hPa : 800
Rack travel in m: 13.55...13.65
4th pressure hPa : 950
Rack travel in m: 14.30...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100

Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump
Pump designation : PES6P120A720LS7237
-11

EP type number : 0 412 726 911
Governor
Governor design. : RQ300/1100PA1010-2
Governor no. : 0 421 801 714

Cust. part no. : 0200747902

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 13.65...13.75
Del. quantity cm³/ : 19.8...20.0
100 s : (19.5...20.3)
Spread cm³ : 0.5
100 s : (0.9)

2nd speed rpm : 300
Rack travel in mm : 6.20...6.80
Del. quantity cm³/ : 1.6...2.2
100 s : (1.3...2.5)
Spread cm³ : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del. quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 355...395

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.65...12.75

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.00...12.30
2nd pressure hPa : 800
Rack travel in m: 12.95...13.15

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del. quantity cm3/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

Note remarks

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70

Speed rpm : 1145...1161

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1300

Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever

position degrees: 72.0...80.0

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 8.30

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 370...410

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600

Rack travel in m: 12.65...12.75

2nd pressure hPa : 800

Rack travel in m: 12.95...13.15

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 800

Del.quantity cm³/ : 201.0...205.0

1000 s: (198.0...208.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 144.0...146.0

1000 s: (141.0...149.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 200.0...220.0

1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 04.94
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 402 746 919

Injection pump
Pump designation : PES6P120A720LS7237
-11
EP type number : 0 412 726 911
Governor
Governor design. : RQ300/1100PA1013-4
Governor no. : 0 421 801 711

Cust. part no. : 0220743402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 HA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.75...13.85

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300

Rack travel in mm : 6.20...6.80

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1400

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92.0...100.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 355...395

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.75...12.85

Measurement

Speed 1/min : 500

1st pressure hPa : 950
Rack travel in m: 13.45...13.65
2nd pressure hPa : --
Rack travel in m: 12.00...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700
Speed rpm : 1400
Del.quantity cm3/ : 203.0...205.0
1000 s: (200.0...208.0)
Spread cm3 : 5.00
1000 s: (9.0)
Aneroid pressure h: 1400
Speed rpm : 800

Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 12.92
Test oil : ISO-4113

Combination no. : 0 402 746 919X

Injection pump
Pump designation : PES6P120A720LS7237
-10
EP type number : 0 412 726 872
Governor
Governor design. : RQ300/1100PA1013-1
Governor no. : 0 421 801 603

Cust. part no. : 0220743402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.75...13.85

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 6.20...6.80
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1400
Del.quantity : 203.0...205.0
1000 : (200.0...208.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 92.0...100.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.80
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 69.0...77.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.75...12.85
2nd pressure hPa : 950
Rack travel in m: 13.45...13.65

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 205.0...209.0
1000 s: (202.0...212.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 05.94
Replaces : 02.92
Test oil : ISO-4113

Combination no. : 0 402 746 923

Injection pump
Pump designation : PES6P120A720LS7237
-11
EP type number : 0 412 726 911
Governor
Governor design. : RQ300/1100PA1013-5
Governor no. : 0 421 801 712

Cust. part no. : 0220743502

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM447 hA

1st version kW : 184.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 120...140

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.65...13.75

Del.quantity cm3/ : 19.8...20.0

100 s: (19.5...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300
Rack travel in mm : 5.60...6.20
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1400
Del.quantity : 198.0...200.0
1000 : (195.0...203.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 200
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 355...395

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.65...12.75
2nd pressure hPa : 800
Rack travel in m: 12.95...13.05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1100

Del.quantity cm3/ : 198.0...200.0
1000 s: (195.0...203.0)
Spread cm3 : 5.00
1000 s: (9.0)
Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm3/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

Note remarks

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x1000

RATED SPEED

1st version
Control lever
position degrees: 95.0...103.0

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.70
Speed rpm : 1145...1161
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 72.0...80.0
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.50

Testing:
Speed rpm : 200
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 370...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 12.00...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : 600
Rack travel in m: 12.65...12.75
2nd pressure hPa : 800
Rack travel in m: 12.85...13.05

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 800

Del.quantity cm3/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1145...1161

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER
Edition : 14.02.94
Replaces : -
Test oil : ISO-4113

Injection pump
Pump designation : PES6MW100/720/3RS151
8-1
EP type number : 0 413 206 018
Governor
Governor design. : RQV325...1300MW133-1
K
Governor no. : 0 420 083 984

Customer-spec. information
Customer : PERKINS

Engine : 180TI

1st version kW : 134.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.95...5.05
: (4.90...5.10)

Rack travel in mm : 13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 2.1...2.5

100 s: (1.9...2.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.45...1.95

2nd speed rpm : 361
travel mm : 2.09...2.59

3rd speed rpm : 500
travel mm : 3.67...4.17

4th speed rpm : 881
travel mm : 6.21...6.71

5th speed rpm : 1355
travel mm : 9.98...10.48

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 325
Rack travel in mm : 5.40...5.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 900
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 9.3...9.5
2nd pressure hPa : 250
Rack travel in m: 10.25...10.35
3rd pressure hPa : 400
Rack travel in m: 13.05...13.55

START CUT-OUT

Speed 1/min : 240 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1300
Del.quantity cm³/ : 138.0...143.0
1000 s: (135.0...143.0)

Spread cm³ : 4.00
1000 s: (7.50)
Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 135.0...139.0
1000 s: (132.0...142.0)
Spread cm³ : 6.00
1000 s: (9.00)
Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm³/ : 106.0...110.0
1000 s: (103.0...113.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 71.0...73.0
1000 s: (69.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...92.0
1000 s: (75.0...95.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.7...5.9
Del.quantity cm³/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°
before start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 244 032
Injection pump
Pump designation : PES4MW100/720RS1519-2
EP type number : 0 413 204 017
Governor
Governor design. : RGV300...1300MW132-1
Governor no. : 0 420 083 292

Customer-spec. information
Customer : MB

Engine : OM364LA

1st version kW : 103.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.8...4.0

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.66...1.16

2nd speed rpm : 629
travel mm : 2.9...3.4

3rd speed rpm : 820
travel mm : 3.86...4.34

4th speed rpm : 1150
travel mm : 5.7...6.2

5th speed rpm : 1354
travel mm : 7.52...8.02

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1510

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 12.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75

Testing:

Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.8...4.0

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.85...13.95

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.0...11.2
2nd pressure hPa : 550
Rack travel in m: 11.50...11.70
3rd pressure hPa : 800
Rack travel in m: 13.0...13.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1300
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 5.00
1000 s: (7.50)
Aneroid pressure h: 1400

Speed rpm : 750
Del.quantity cm3/ : 122.0...126.0
1000 s: (119.0...129.0)
Spread cm3 : 6.00
1000 s: (9.00)
Aneroid pressure h: 1400
Speed rpm : 600
Del.quantity cm3/ : 124.0...128.0
1000 s: (121.0...131.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 66.0...68.0
1000 s: (64.0...70.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack travel: 12.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...145.0
1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.8...4.0
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 244 032

Injection pump
Pump designation : PES4MW100/720RS1519-
2
EP type number : 0 413 204 017
Governor
Governor design. : RQV300...1300MW132-1
Governor no. : 0 420 083 292

Customer spec. information
Customer : MB

Engine : OM364LA

1st version kW : 103.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del. quantity cm³/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.8...4.0

Del. quantity cm³/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.66...1.16

2nd speed rpm : 629

travel mm : 2.9...3.4

3rd speed rpm : 820

travel mm : 3.84...4.34

4th speed rpm : 1150

travel mm : 5.7...6.2

5th speed rpm : 1354

travel mm : 7.52...8.02

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del. quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.9
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.8...4.0

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.85...13.95

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.0...11.2
2nd pressure hPa : 550
Rack travel in m: 11.5...11.7
3rd pressure hPa : 800
Rack travel in m: 13.0...13.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1300
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 4.00
1000 s: (7.50)
Aneroid pressure h: 1400

Speed rpm : 750
Del.quantity cm3/ : 122.0...126.0
1000 s: (119.0...129.0)
Spread cm3 : 6.00
1000 s: (9.00)
Aneroid pressure h: 1400
Speed rpm : 600
Del.quantity cm3/ : 124.0...128.0
1000 s: (121.0...131.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 66.0...68.0
1000 s: (64.0...70.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...145.0
1000 s: (137.0...148.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.8...4.0
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 244 034
Injection pump
Pump designation : PES4MM100/720RS1519-3
EP type number : 0 413 204 018
Governor
Governor design. : RGV300...1300MW132-3
Governor no. : 0 420 083 296

Customer-spec. information
Customer : MB

Engine : OM364LA

1st version kW : 77.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.5...11.6

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.66...1.16

2nd speed rpm : 629
travel mm : 2.9...3.4

3rd speed rpm : 800
travel mm : 3.75...4.25

4th speed rpm : 1140
travel mm : 5.63...6.13

5th speed rpm : 1345
travel mm : 7.39...7.89

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 10.5
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.9...4.1

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.5...11.6

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.6...10.8
2nd pressure hPa : 500
Rack travel in m: 11.0...11.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm³/ : 94.0...96.0
1000 s: (92.0...98.0)
Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm³ : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...135.0
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.9...4.1
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 244 035
Injection pump
Pump designation : PES4MM100/72ORS1519-3
EP type number : 0 413 204 018
Governor
Governor design. : RQV300...1300MW132-3
Governor no. : 0 420 083 296

Customer-spec. information
Customer : MB

Engine : OM364LA

1st version kW : 77.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed	rpm	: 1300
Rack travel in mm		: 11.5...11.6
Del. quantity cm ³ /		: 9.4...9.6
100 s:		(9.2...9.8)
Spread	cm ³	: 0.3
100 s:		(0.6)
2nd speed	rpm	: 300.0
Rack travel in mm		: 3.9...4.1
Del. quantity cm ³ /		: 1.0...1.4
100 s:		(0.75...1.65)
Spread	cm ³	: 0.3
100 s:		(0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed	rpm	: 300
travel mm		: 0.66...1.16
2nd speed	rpm	: 629
travel mm		: 2.9...3.4
3rd speed	rpm	: 800
travel mm		: 3.75...4.25
4th speed	rpm	: 1140
travel mm		: 5.63...6.13
5th speed	rpm	: 1345
travel mm		: 7.39...7.89

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1400
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version		
Speed	rpm	: 1300
Aneroid pressure h:		1000
Del. quantity		: 94.0...96.0
1000		: (92.0...98.0)
Spread	cm ³	: 3.50
1000		: (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.5
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.9...4.1

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.5...11.6

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.6...10.8
2nd pressure hPa : 500
Rack travel in m: 11.0...11.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 94.0...96.0
1000 s: (92.0...98.0)
Spread cm3 : 3.50
1000 s: (6.00)
Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm3/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...135.0
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.9...4.1
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 244 036
Injection pump
Pump designation : PES4MW100/720RS1519-3
EP type number : 0 413 204 018
Governor
Governor design. : RQV300...1300MW132-5
Governor no. : 0 420 083 308

Customer-spec. information
Customer : MB

Engine : OM364LA

1st version kw : 77.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.5...11.6

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.5

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1420...1450

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.9...4.1

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.5...11.6

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in mm : 10.6...10.8
2nd pressure hPa : 500
Rack travel in mm : 11.0...11.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version:
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm³/ : 94.0...96.0
1000 s: (92.0...98.0)
Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm³ : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50

K06

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...135.0
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.9...4.1
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 244 037
Injection pump
Pump designation : PES4MW100/720RS1519-2
EP type number : 0 413 204 017
Governor
Governor design. : RQV300...1300MW132-6
Governor no. : 0 420 083 309

Customer-spec. information
Customer : MB

Engine : OM364LA

1st version kW : 103.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.85...13.95

Del.quantity cm3/ : 12.5...12.7

100 s: (12.2...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.7...3.9

Del.quantity cm3/ : 1.0...1.4

100 s: (0.75...1.65)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm3 : 4.0

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 12.9

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1435...1465

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75

Testing:

Speed rpm : 200
Minimum rack travel: 4.50
Speed rpm : 300
Rack travel in mm : 3.7...3.9

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 13.85...13.95

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.7...10.9
2nd pressure hPa : 550
Rack travel in m: 11.5...11.7
3rd pressure hPa : 800
Rack travel in m: 13.0...13.2

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1300
Del.quantity cm³/ : 125.0....127.0
1000 s: (122.0...130.0)
Spread cm³ : 4.0
1000 s: (7.50)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm³/ : 122.0...126.0
1000 s: (119.0...129.0)
Spread cm³ : 6.00
1000 s: (9.00)
Aneroid pressure h: 1400
Speed rpm : 600
Del.quantity cm³/ : 126.0...130.0
1000 s: (123.0...133.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 66.0...68.0
1000 s: (64.0...70.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.9
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...145.0
1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.7...3.9
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 10.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 246 034
Injection pump
Pump designation : PES6MW100/720RS1517-
2
EP type number : 0 413 206 019
Governor
Governor design. : RQV300...1300MW132
Governor no. : 0 420 083 291

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00...0.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 12.8...13.0

100 s: (12.5...13.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

travel mm : 2.78...3.28

4th speed rpm : 1100

travel mm : 4.51...5.01

5th speed rpm : 1353

travel mm : 6.45...6.95

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1400

Del.quantity : 128.0...130.0

1000 : (125.0...133.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:
1st rack travel in: 13.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.0

Testing:
Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 3.90...4.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1400
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 500
Rack travel in m: 10.60...10.80
3rd pressure hPa : 850
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 1300
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)
Spread cm3 : 4.00
1000 s: (7.5)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 128.0...132.0
1000 s: (125.0...135.0)

Spread cm3 : 6.00
1000 s: (9.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...145.0
1000 s: (132.0...148.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.90...4.10
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 15.02.94
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 246 035
 Injection pump
 Pump designation : PES6MM100/720RS1517-3
 EP type number : 0 413 206 020
 Governor
 Governor design. : RGV300...1300MW132-2
 Governor no. : 0 420 083 293

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
 : (4.45...4.65)

Rack travel in mm : 21.00...0.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.95...12.05

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.77...1.27

2nd speed rpm : 490

travel mm : 2.0...2.5

3rd speed rpm : 710

travel mm : 2.78...3.28

4th speed rpm : 1100

travel mm : 4.51...5.01

5th speed rpm : 1353

travel mm : 6.45...6.95

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.0
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.1

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 4.0...4.2

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.95...12.05

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.8...9.7
2nd pressure hPa : 150
Rack travel in m: 10.25...10.45
3rd pressure hPa : 300
Rack travel in m: 11.25...11.45

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 101.0...103.0
1000 s: (99.0...105.0)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 91.5...94.5
1000 s: (89.0...97.0)

Spread cm3 : 5.50
1000 s: (7.00)
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 93.5...96.5
1000 s: (91.0...99.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.0
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.0...4.2
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 246 036
Injection pump
Pump designation : PES6MM100/720RS1517-
2
EP type number : 0 413 206 019
Governor
Governor design. : RGV300...1300MM132-4
Governor no. : 0 420 083 299

Customer spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.50...4.60
: (4.45...4.65)

Rack travel in mm : 21.00...0.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.45...13.55

Del. quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.77...1.27

2nd speed rpm : 490
travel mm : 2.0...2.5

3rd speed rpm : 710
travel mm : 2.78...3.28

4th speed rpm : 1100
travel mm : 4.51...5.01

5th speed rpm : 1353
travel mm : 6.45...6.95

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 12.5
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1470...1500
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.0

Testing:

Speed rpm : 200
Minimum rack travel: 5.00
Speed rpm : 300
Rack travel in mm : 3.9...4.1

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.45...13.55

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.1...10.3
2nd pressure hPa : 300
Rack travel in m: 10.7...10.9
3rd pressure hPa : 600
Rack travel in m: 12.5...12.7

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 118.0...120.0
1000 s: (116.0...122.0)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 117.5...120.5
1000 s: (115.0...123.0)

Spread cm3 : 5.50
1000 s: (7.00)
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 117.5...120.5
1000 s: (115.0...123.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 50.0...52.0
1000 s: (48.0...54.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.5
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...135.0
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.9...4.1
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.04.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 276 005
Injection pump
Pump designation : PES6MW100/72ORS1517-
1
EP type number : 0 413 206 017
Governor
Governor design. : RSV350...1200MWA355
Governor no. : 0 420 085 228

Cust. part no. : 0250740102

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 100.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.5...4.6
: (4.45...4.65)
Rack travel in mm : 21.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-130-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.0...11.1

Del.quantity cm3/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 3.2...3.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.3...0.9

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del.quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 10.0
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1400
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 3.3
Speed rpm : 350
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.95...11.15

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.1...10.3
2nd pressure hPa : 300
Rack travel in m: 10.4...10.6
3rd pressure hPa : 380
Rack travel in m: 10.7...10.9

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm³ : 5.5
1000 s: (7.00)
Aneroid pressure h: -
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 68.0...70.0
1000 s: (66.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.0
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...100.0
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 3.2...3.4
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 07.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 276 006

Injection pump
Pump designation : PES6MW100/720RS1517-
1
EP type number : 0 413 206 017
Governor
Governor design. : RSV350...1200MWA355
-1
Governor no. : 0 420 085 229

Cust. part no. : 0250740202

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 120.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

K17

Prestroke mm : 4.5...4.6
(4.45...4.65)
Rack travel in mm : 21.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.4...11.5

Del. quantity cm³/ : 10.1...10.3
100 s: (9.9...10.5)

Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 3.2...3.4
Del. quantity cm³/ : 1.0...1.4
100 s: (0.8...1.6)

Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.3...0.9

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Aneroid pressure h: 1000
Del. quantity : 101.0...103.0
1000 : (99.0...105.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 92...100

Setting point:
Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 10.4
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1400
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 3.3
Speed rpm : 350
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.35...11.55

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.55...9.75
2nd pressure hPa : 350
Rack travel in m: 9.9...10.1
3rd pressure hPa : 530
Rack travel in m: 10.9...11.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 97.5...100.5
1000 s: (95.0...103.0)
Spread cm3 : 5.5
1000 s: (7.00)
Aneroid pressure h: -
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

K18

1st version

1mm rack travel less than

full load rack tr: 10.4
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...100.0
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 3.2...3.4
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 14.04.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 276 009
Injection pump
Pump designation : PES6MW100/720RS1517-
2
EP type number : 0 413 206 019
Governor
Governor design. : RSV350...1200MWA357
Governor no. : 0 420 085 233

Cust. part no. : 0250740402

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 155.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.5...4.6
: (4.45...4.65)
Rack travel in mm : 21.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.0...14.1

Del. quantity cm3/ : 12.7...12.9

100 s: (12.4...13.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 3.2...3.4

Del. quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.3...0.9

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1500

Del. quantity : 127.0...129.0

1000 : (124.0...132.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed rpm : 800

Rack travel in mm : 0.5

Testing:

1st rack travel in: 13.0
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 3.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.0
Speed rpm : 350
Rack travel in mm : 3.2...3.4

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 14.0...14.1

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.45...9.65
2nd pressure hPa : 350
Rack travel in m: 10.4...10.6
3rd pressure hPa : 750
Rack travel in m: 12.9...13.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 750
Del.quantity cm3/ : 128.0...132.0
1000 s: (125.0...135.0)
Spread cm3 : 6.0
1000 s: (9.00)
Aneroid pressure h: -
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 42.0...44.0
1000 s: (40.0...46.0)

K20

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.0
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 3.2...3.4
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

Check hydraulic latching of starting
fuel delivery with 1.5 bar air.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.09.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 444 149

Injection pump
Pump designation : PES4MW100/720RS1151
EP type number : 0 413 404 104
Governor
Governor design. : RQV300...1300MW50-27
Governor no. : 0 420 083 273

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM364A

1st version kW : 79.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 10.50

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.8...10.9

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.2...1.6

2nd speed rpm : 500
travel mm : 2.7...3.3

3rd speed rpm : 1350
travel mm : 8.5...8.7

4th speed rpm : 1450
travel mm : 9.4...10.0

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 9.8
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 74...82

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.3...6.5

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.6...11.8

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.7...9.8
2nd pressure hPa : 200
Rack travel in m: 10.7...10.9
3rd pressure hPa : 300
Rack travel in m: 11.3...11.5

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1300
Del.quantity cm3/ : 82.0...84.0
1000 s: (80.0...86.0)
Spread cm3 : 3.50
1000 s: (6.00)
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 75.0...78.0
1000 s: (72.5...80.5)

Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.8
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.3...6.5
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 21.08.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 295
Injection pump
Pump designation : PES6MM100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW67-5
Governor no. : 0 420 083 262

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.40...8.80

2nd speed rpm : 880
travel mm : 4.90...5.10

3rd speed rpm : 500
travel mm : 2.70...3.30

4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.10...12.40
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600

Del.quantity cm3/ : 85.0...88.0
1000 s: (82.5...90.5)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 25.02.94
Replaces : 03.92
Test oil : ISO-4113
Combination no. : 0 403 446 301
Injection pump
Pump designation : PES6MM100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RGV300...1300MW50-22
Governor no. : 0 420 083 268

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.60...3.20

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1470...1500
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.4...14.5

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.8...10.9
2nd pressure hPa : 200
Rack travel in m: 11.1...11.3
3rd pressure hPa : 500
Rack travel in m: 13.5...13.7

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 105.5...108.5
1000 s: (103.0...111.0)
Spread cm³ : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : 09.92
Test oil : ISO-4113

Combination no. : 0 403 446 302

Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1300MW50-24
Governor no. : 0 420 083 270

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test Lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.75)
Rack travel in mm : 9.00...12.00

K27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...10.00

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.30

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 750
Rack travel in m: 11.60...11.70
3rd speed rpm : 1100
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.6...11.7

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.8...9.9
2nd pressure hPa : 200
Rack travel in m: 10.2...10.3
3rd pressure hPa : 300
Rack travel in m: 11.0...11.3

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

K28

1st version
Aneroid pressure h: 700
Speed rpm : 1300
Del.quantity cm3/ : 87.0...89.0
1000 s: (85.0...91.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.02.94
Replaces : 03.92
Test oil : ISO-4113

Combination no. : 0 403 446 303

Injection pump
Pump designation : PES6MW100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW50-25
Governor no. : 0 420 083 271

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kw : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.40...10.00

2nd speed rpm : 1350
travel mm : 8.50...8.70

3rd speed rpm : 500
travel mm : 2.70...3.30

4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.1...13.2

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.5...10.6
2nd pressure hPa : 200
Rack travel in m: 11.2...11.3
3rd pressure hPa : 350
Rack travel in m: 12.4...12.7

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 87.0...91.0
1000 s: (85.0...93.0)
Spread cm3 : 5.00
1000 s: (7.0)

L02

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.03.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 321
Injection pump
Pump designation : PES6MW100/720RS1131
EP type number : 0 413 406 123
Governor
Governor design. : RQV300...1300MW50-31
Governor no. : 0 420 083 294
Cust. part no. : 0240748802

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.15...1.65
2nd speed rpm : 510
travel mm : 4.03...4.53
3rd speed rpm : 710
travel mm : 4.91...5.41
4th speed rpm : 1354
travel mm : 8.03...8.43

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 700
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 9.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.40...5.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.20...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.30
2nd pressure hPa : 300
Rack travel in m: 9.70...9.90
3rd pressure hPa : 400
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 850
Del.quantity cm3/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 48.0...50.0
1000 s: (46.0...52.0)

L04

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 16.03.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 323
Injection pump
Pump designation : PES6MW100/720RS1131-
1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW50-33
Governor no. : 0 420 083 298

Cust. part no. : 0240748902

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.25...13.35

Del. quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...6.6
Del. quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.13...1.63
2nd speed rpm : 510
travel mm : 4.03...4.53
3rd speed rpm : 720
travel mm : 4.94...5.44
4th speed rpm : 1360
travel mm : 8.09...8.59

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 1000
Del. quantity : 98.0...100.0
1000 : (96.0...102.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:

1st rack travel in: 12.3
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.4...6.6

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.25...13.35

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.85...11.05
2nd pressure hPa : 200
Rack travel in m: 11.3...11.5
3rd pressure hPa : 350
Rack travel in m: 12.5...12.7

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 86.0...90.0
1000 s: (84.0...92.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 40.0...42.0
1000 s: (38.0...44.0)

LO6

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.3
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.4...6.6
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
Edition : 15.03.94
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 324
Injection pump
Pump designation : PES6MW100/720RS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQV300...1300MW136
Governor no. : 0 420 083 300

Cust. part no. : 0240749002

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 177.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 715 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.4...14.5

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.89...1.39

2nd speed rpm : 578

travel mm : 4.46...4.96

3rd speed rpm : 640

travel mm : 4.85...5.35

4th speed rpm : 1355

travel mm : 9.93...10.43

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:
1st rack travel in: 13.4
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.5...6.7

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.4...14.5

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.95...11.05
2nd pressure hPa : 200
Rack travel in m: 11.25...11.45
3rd pressure hPa : 500
Rack travel in m: 13.95...14.15

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 111.0...113.0
1000 s: (109.0...115.0)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 104.5...107.5
1000 s: (102.0...110.0)

Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 40.0...42.0
1000 s: (38.0...44.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.4
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.5...6.7
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 C
Edition : 30.03.94
Replaces : 06.91
Test oil : ISO-4113

Combination no. : 0 403 456 113

Injection pump
Pump designation : PES6MW100/321RS1210
EP type number : 0 413 406 201
Governor
Governor design. : RQ250/1050MW84-6
Governor no. : 0 420 082 049

Cust. part no. : 3-7127

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH 250

1st version kW : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6
: (3.3.45...3.65)
Rack travel in mm : 9.0...12.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.0...14.1

Del.quantity cm3/ : 16.2...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.3...1.7
100 s: (1.05...1.95)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.35...1.55
2nd speed rpm : 341
travel mm : 3.45...3.65
3rd speed rpm : 460
travel mm : 5.9...6.1
4th speed rpm : 1107
travel mm : 6.44...6.64

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108...110
Speed rpm : 600
Rack travel in mm : 19.2...20.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1100
Del.quantity : 161.0...163.0
1000 : (158.0...166.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.0
Speed rpm : 1075...1090
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 7.5
Speed rpm : 250
Rack travel in mm : 4.9...5.1

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1100
Rack travel mm : 14.0...14.1

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.2...9.3
2nd pressure hPa : 150
Rack travel in m: 9.5...9.6
3rd pressure hPa : 700
Rack travel in m: 12.8...13.1

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 600

Del.quantity cm³/ : 161.5...165.5
1000 s: (158.5...168.5)
Spread cm³ : 6.00
1000 s: (9.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 157.5...161.5
1000 s: (154.5...164.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.0
Speed rpm : 1075...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 70.0...90.0
1000 s: (67.0...93.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.9...5.1
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 6,2 F
Edition : 30.03.94
Replaces : 09.92
Test oil : ISO-4113
Combination no. : 0 403 456 120
Injection pump
Pump designation : PES6MW100/321RS1210
EP type number : 0 413 406 201
Governor
Governor design. : RQ250/1050MW/84-11
Governor no. : 0 420 082 066

Cust. part no. : 3-7220

Customer spec. information
Customer : MAN

Engine : D 0826 LUH 06

1st version kW : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6
: (3.3.45...3.65)
Rack travel in mm : 9.0...12.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.0...14.1

Del. quantity cm³/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 1.3...1.7

100 s: (1.05...1.95)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.35...1.55

2nd speed rpm : 341

travel mm : 3.45...3.65

3rd speed rpm : 460

travel mm : 5.9...6.1

4th speed rpm : 1107

travel mm : 6.44...6.64

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108...110

Speed rpm : 600

Rack travel in mm : 19.2...20.8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1100

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.0
Speed rpm : 1097...1113
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 6.5
Speed rpm : 250
Rack travel in mm : 5.0...5.2

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1100
Rack travel mm : 14.0...14.1

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.4...9.5
2nd pressure hPa : 150
Rack travel in m: 9.7...9.8
3rd pressure hPa : 700
Rack travel in m: 13.2...13.5

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 600

Del.quantity cm3/ : 161.0...165.0
1000 s: (158.0...168.0)
Spread cm3 : 6.00
1000 s: (9.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm3/ : 155.0...159.0
1000 s: (152.0...162.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.0
Speed rpm : 1097...1113

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 60.0...80.0
1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.0...5.2
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 H 2
Edition : 20.04.94
Replaces : 01.91
Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump
Pump designation : PES6MW100/120RS1137-1

EP type number : 0 413 406 157

Governor

Governor design. : RSV450...1100MW2A319-13

Governor no. : 0 420 085 114

Cust. part no. : 3195686

Customer-spec. information
Customer : CDC

Engine : 6 CTA
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 9 410 270 183

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

L13

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 15.05...15.25

100 s: (14.85...15.45)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 6.7...6.9

Del. quantity cm³/ : 1.6...2.0

100 s: (1.35...2.25)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: -

Del. quantity : 150.5...152.5

1000 : (148.5...154.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.5
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1370
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 14.0...14.1
2nd speed rpm : 1100
Rack travel in m: 12.5...12.7
3rd speed rpm : 950
Rack travel in m: 13.2...13.6

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del.quantity cm3/ : 130.5...133.5
1000 s: (128.0...136.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.5
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 20.04.94
Replaces : 04.92
Test oil : ISO-4113

Combination no. : 0 403 466 117JD

Injection pump
Pump designation : PES6MM100/120RS1178
EP type number : 0 413 406 160
Governor
Governor design. : RSV350...1250MW2A332
-3
Governor no. : 0 420 085 152

Cust. part no. : 3922489

Customer-spec. information
Customer : CDC

Engine : 6 CTA

1st version kW : 186.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55
(3.4...3.6)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del. quantity cm3/ : 14.25...14.45

100 s : (14.05...14.65)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.7...6.9
Del. quantity cm3/ : 2.35...2.75
100 s : (2.15...2.95)
Spread cm3 : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del. quantity : 142.5...144.5
1000 : (140.5...146.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 50...58

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 13.1
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control Lever
position degrees: 29...37
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.40

SET IDLE AUXILIARY SPRING
Rack travel in mm : 4.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.0...14.1

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.7...10.9
2nd pressure hPa : 215
Rack travel in m: 11.6...11.8
3rd pressure hPa : 390
Rack travel in m: 13.0...13.4

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 92.5...93.5
1000 s: (90.5...98.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.1
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 23.5...27.5
1000 s: (21.5...29.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 28.05.93
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 137

Injection pump
Pump designation : PES6MW10G/12GRS1148
EP type number : 0 413 406 143
Governor
Governor design. : RSV400...900MW7A319-24
Governor no. : 0 420 085 216

Cust. part no. : 3921082

Customer spec. information
Customer : CDC

Engine : 6 CTA
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 13.5...13.6
Del. quantity cm3/ : 18.3...18.5
100 s: (18.0...18.8)
Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.7...5.9
Del. quantity cm3/ : 1.6...2.0
100 s: (1.35...2.25)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del. quantity : 183.0...185.0
1000 : 180.0...188.0
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 105...113

Setting point:

Speed rpm : 800
Rack travel in mm : 0.65

Testing:

1st rack travel in: 12.5
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 980...990
4th rack travel in: 1125
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.7...5.9

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 6.2...6.4

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.5
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 31.03.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 145

Injection pump
Pump designation : PES6MW100/120RS1137-
2
EP type number : 0 413 406 180
Governor
Governor design. : RSV550...1100MW2A319
-28
Governor no. : 0 420 085 225

Cust. part no. : 3925549

Customer-spec. information
Customer : CDC

Engine : 6 CTA

1st version kW : 191.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.4...14.5

Del. quantity cm3/ : 14.95...15.15

100 s: (14.65...15.45)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 550.0
Rack travel in mm : 5.9...6.1
Del. quantity cm3/ : 1.75...2.15
100 s: (1.5...2.4)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del. quantity : 145.0...147.0
1000 : (142.0...150.0)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 93...101

Setting point:

Speed rpm : 800
Rack travel in mm : 0.65

Testing:

1st rack travel in: 13.4
Speed rpm : 1155...1175
2nd rack travel in: 4.00
Speed rpm : 1225...1245
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 550
Rack travel in mm : 5.9...6.1

SET IDLE AUXILIARY SPRING

Speed rpm : 550
Rack travel in mm : 6.9...7.1

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.4
Speed rpm : 1155...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 17.5...21.5
1000 s: (15.0...24.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
Edition : 01.03.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 147

Injection pump
Pump designation : PES6MW100/120RS1148
EP type number : 0 413 406 143
Governor
Governor design. : RSV400...900MW4A361
Governor no. : 0 420 085 242

Cust. part no. : 3924615

Customer-spec. information
Customer : CDC

Engine : 6 CTA

1st version kW : 208.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.6...3.7
: (3.55...3.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
Rack travel in mm : 13.5...13.6
Del.quantity cm3/ : 18.3...18.5
100 s: (18.0...18.8)
Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 400.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.6...2.0
100 s: (1.35...2.25)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Del.quantity : 183.0...185.0
1000 : 180.0...188.0
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 105...113

Setting point:
Speed rpm : 800
Rack travel in mm : 0.65

Testing:
1st rack travel in: 12.5
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 980...990
4th rack travel in: 1125
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.7...5.9

SET IDLE AUXILIARY SPRING
Speed rpm : 400
Rack travel in mm : 6.2...6.4

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.5
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 5
 Edition : 02.05.94
 Replaces : 04.91
 Test oil : ISO-4113

Combination no. : 0 403 476 103

Injection pump
 Pump designation : PES6MW100/32ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1200MWOA342
 -6
 Governor no. : 0 420 085 169

Cust. part no. : 0210746502

Customer-spec. information
 Customer : MB

Engine : OM 366A

1st version kW : 92
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8
 : (3.65...3.85)
 Rack travel in mm : 9.0...12.0
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.1...10.2

Del.quantity cm3/ : 6.5...6.7
 100 s: (6.3...6.9)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.2...6.9
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.65...15.5)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 750
 Del.quantity : 65.0...67.0
 1000 : (63.0...69.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 94...102

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.65

Testing:

1st rack travel in: 9.1
Speed rpm : 1235...1240
2nd rack travel in: 4.00
Speed rpm : 1274...1279
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1245...1265
Speed rpm : 9.10

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.55
Speed rpm : 350
Rack travel in mm : 6.2...6.9
Rack travel in mm : 2.00
Speed rpm : 440...500

SET IDLE AUXILIARY SPRING

Speed rpm : 350
Rack travel in mm : 6.55

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.1...10.2
2nd speed rpm : 600
Rack travel in m: 10.8...11.0
3rd speed rpm : 1000
Rack travel in m: 10.4...10.6

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 10.9...11.0

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.6...9.7
2nd pressure hPa : 180
Rack travel in m: 9.8...10.0
3rd pressure hPa : 350
Rack travel in m: 10.5...10.7

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 600
Del.quantity cm3/ : 58.0...61.0
1000 s: (55.5...63.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 45.0...47.0
1000 s: (43.0...49.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.1
Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.2...6.9
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 6
 Edition : 02.05.94
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 104
 Injection pump
 Pump designation : PES6MW100/32ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1200MWA342
 -7
 Governor no. : 0 420 085 170
 Cust. part no. : 0210746602

Customer-spec. information
 Customer : MB

Engine : OM 366A

1st version kw : 100
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8
 : (3.65...3.85)
 Rack travel in mm : 9.0...12.0
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.5...10.6

Del.quantity cm3/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.5

Del.quantity cm3/ : 0.9...1.3

100 s: (0.65...15.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 10.5
Speed rpm : 1240...1245
2nd rack travel in: 4.00
Speed rpm : 1284...1289
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1256
Speed rpm : 9.5

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.15
Speed rpm : 350
Rack travel in mm : 5.8...6.5
Rack travel in mm : 2.00
Speed rpm : 450...530

SET IDLE AUXILIARY SPRING

Speed rpm : 350
Rack travel in mm : 6.15

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.5...10.6
2nd speed rpm : 600
Rack travel in m: 11.3...11.4
3rd speed rpm : 1000
Rack travel in m: 10.9...11.1

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 11.3...11.4

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.6...9.7
2nd pressure hPa : 150
Rack travel in m: 9.9...10.1
3rd pressure hPa : 300
Rack travel in m: 10.9...11.1

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 600
Del.quantity cm3/ : 67.5...70.5
1000 s: (65.0...73.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 45.0...47.0
1000 s: (43.0...49.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.5
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.8...6.5
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 D 7
 Edition : 02.05.94
 Replaces : 07.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 105
 Injection pump
 Pump designation : PES6MW100/32ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1200MWA342
 -8
 Governor no. : 0 420 085 171

Cust. part no. : 0210746702

Customer-spec. information
 Customer : MB

Engine : OM 366A

1st version kW : 114
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.7...3.8
 : (3.65...3.85)
 Rack travel in mm : 9.0...12.0
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.9...11.0

Del.quantity cm3/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.5

Del.quantity cm3/ : 0.9...1.3

100 s: (0.65...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 750

Del.quantity : 83.0...85.0

1000 : (81.0...87.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 9.9
Speed rpm : 1240...1245
2nd rack travel in: 4.00
Speed rpm : 1289...1294
3rd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1256
Speed rpm : 9.9

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.15
Speed rpm : 350
Rack travel in mm : 5.8...6.5
Rack travel in mm : 2.00
Speed rpm : 420...500

SET IDLE AUXILIARY SPRING

Speed rpm : 350
Rack travel in mm : 6.15

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.9...11.0
2nd speed rpm : 600
Rack travel in m: 11.7...11.8
3rd speed rpm : 1000
Rack travel in m: 11.0...11.2

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 11.7...11.8

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.6...9.7
2nd pressure hPa : 300
Rack travel in m: 10.7...10.9
3rd pressure hPa : 400
Rack travel in m: 11.3...11.5

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

L28

Speed rpm : 600
Del.quantity cm3/ : 78.0...81.0
1000 s: (75.5...83.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 45.0...47.0
1000 s: (43.0...49.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.9
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.8...6.5
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

Set pneumatic shutoff device to
control-rod stop = 0.5...1.5 mm
control-rod travel at 4.5 bar
atmospheric pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
Edition : 12.04.94
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 486 109

Injection pump
Pump designation : PES6MW100/321RS1208
EP type number : 0 413 406 199
Governor
Governor design. : RSV350...1000MW1A360
-2
Governor no. : 0 420 085 240

Cust. part no. : 3-7312

Customer-spec. information
Customer : MAN

Engine : D 0826 LE103

1st version kW : 161.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.5...3.6
: (3.3.45...3.65)
Rack travel in mm : 9.0...12.0
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 970

Rack travel in mm : 14.85...14.95

Del.quantity cm3/ : 15.0...15.2
100 s: (14.7...15.5)

Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 350.0
Rack travel in mm : 4.3...4.7
Del.quantity cm3/ : 1.1...1.5
100 s: (0.85...1.75)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.3...1.0

Governor spring pre-tension
Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 970
Del.quantity : 150.0...152.0
1000 : (147.0...155.0)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 87...95

Setting point:
Speed rpm : 800

Rack travel in mm : 0.65

Testing:

1st rack travel in: 13.9
Speed rpm : 1020...1030

2nd rack travel in: 4.00
Speed rpm : 1180...1190

3rd rack travel in: 4.0
Speed rpm : 1085...1115

4th rack travel in: 1150
Speed rpm : 0.3...1.7

LOW IDLE 1

Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 4.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.0

Speed rpm : 350

Rack travel in mm : 4.3...4.7

SET IDLE AUXILIARY SPRING

Speed rpm : 350

Rack travel in mm : 4.8...5.2

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 970

Rack travel in m: 14.85...14.95

2nd speed rpm : 500

Rack travel in m: 14.8...15.0

3rd speed rpm : 700

Rack travel in m: 14.8...15.0

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 148.0...152.0
1000 s: (145.0...155.0)

Spread cm3 : 6.00
1000 s: (9.0)

Speed rpm : 700

Del.quantity cm3/ : 156.0...160.0
1000 s: (153.0...163.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.9

Speed rpm : 14.85...14.95

MD2

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0
1000 s: (137.0...163.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 2
 Edition : 30.04.92
 Replaces : 09.88
 Test oil : ISO-4113
 Combination no. : 9 400 230 066
 Injection pump
 Pump designation : PES6A100D41ORS2676
 EP type number : 9 410 230 023
 Governor
 Governor design. : RSV425...1100A2C2161
 -1L
 Governor no. : 9 420 234 133

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55
 : (2.40...2.60)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.40...9.50

Del. quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.3...5.5

Del. quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del. quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1145...1155

2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.40...9.40
2nd speed rpm : 750
Rack travel in m: 10.60...10.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 173
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 80
Rack travel in m: 9.40...9.80
3rd pressure hPa : 500
Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500
Speed rpm : 750
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : -
1000 s: (84.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (185.0...215.0)
Rack travel in mm : 19.40...19.40

HIGH IDLE

1st version
Speed rpm : 1195
Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 21.0...25.0
1000 s: (18.5...27.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE23746

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 3
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 068
Injection pump
Pump designation : PES6A1000410RS2676-1
Governor
Governor design. : RSV450...1000A1B2186
-L

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 413 009

Opening
pressure, bar : 172...175

Test lines : 9 631 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300
: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.90...10.00
Del. quantity cm3/ : 10.50...10.70
Spread cm3 : 0.35
100 s : (0.60)

2nd speed rpm : 450
Rack travel in mm : 5.20...5.40
Del. quantity cm3/ : 1.80...2.20
Spread cm3 : 0.35
100 s : (0.60)

GUIDE SLEEVE POSITION

Control-lever position
Degree: LOSE
Speed rpm : 800
Rack travel in mm : 0.30...1.000

Governor spring pre-tension
Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del. quantity : 105.00...107.00
1000 : (103.0...109.0)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 8.90
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.80

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 109.50...112.50
1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 4
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 068
Injection pump
Pump designation : PES6A100D41GRS2676-1
Governor
Governor design. : RSV450...1000A1C2186
-L

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00x2,00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300
: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.90...10.00
Del. quantity cm³/ : 10.50...10.70
Spread cm³ : 0.35
100 s : (0.60)

2nd speed rpm : 450
Rack travel in mm : 5.20...5.40
Del. quantity cm³/ : 1.80...2.20
Spread cm³ : 0.35
100 s : (0.60)

GUIDE SLEEVE POSITION

Control-lever position
Degree: LOSE
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del. quantity : 105.00...107.00
1000 : (103.0...109.0)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 8.90
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.80

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 109.50...112.50
1000 s: (107.0...115.0)

Remarks:

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 2
Edition : 14.6.88
Replaces : 4.3.87
Test oil : ISO-4113

Combination no. : 9 400 230 098

Injection pump
Pump designation : PES6A1000320/3RS2691
Governor
Governor design. : RSV425...1100A2C2190
-9R

Customer spec. information
Customer : CUMMINS

Engine : 6CTA 8,3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder
assembly : 1 688 901 016

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.5

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13,00...13,10

Del. quantity cm3/ : 11.4...11.6

100 s : (11.1...11.8)

Spread cm3 : 0.35

100 s : (0.6)

2nd speed rpm : 425
Rack travel in mm : 5,80...6,00
Del. quantity cm3/ : 1.30...1.70

100 s : (-)

Spread cm3 : 0.35
100 s : (0.55)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 113.5...115.5

1000 : (111.5...117.5)

RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 12.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1190...1220

3rd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 5.40

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 470...530

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0
1000 s: (130.0)
Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 3
 Edition : 22.11.91
 Replaces : 18.9.91
 Test oil : ISO-4113
 Combination no. : 9 400 230 107
 Injection pump
 Pump designation : PES6A1000320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...1200AB1233R
 Governor no. : 9 420 231 018

Customer-spec. information
 Customer : C.D.C

Engine : 6CT83D

1st version kW : 157.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.00...0.20

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm : 450

travel mm : 1.90...2.40

4th speed rpm : 1200

travel mm : 6.90...6.90

5th speed rpm : 1350

travel mm : 8.15...8.65

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1435

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700
Del.quantity : 112.5...114.5
1000 : (110.5...116.5)
Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 40...46

Testing:
1st rack travel in: 9.80
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...15
Speed rpm : 350
Rack travel in mm : 4.60...4.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 260
Rack travel in m: 9.90...10.00
3rd pressure hPa : 345
Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 85.5...89.5
1000 s: (83.5...91.5)
Aneroid pressure h: -

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm
before stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 A
Edition : 28.04.94
replaces : 08.04.91
Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209
Type number : 0 460 406 048
Customer Part-No. :

Customer-specific information
Customer : ONAN

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 0.98
mm: +0.04(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 3.90...4.30

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm3/
1000S.: 58.50...59.50

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 44.00...45.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm3/
1000S.: 14.00...18.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1900
Charge press hPa: 800
Del. quantity cm3/
1000S.: 37.00...43.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 42.00...92.00
mind 1000S.: 42.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1400
Charge press hPa: 800

Inj.-qty. cm3/
 difference 1000S.: 9.50...17.50 *
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1400
 Charge press hPa: 800
 TD-travel
 difference mm: 0.50...0.70 *
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
 Charge press hPa: 800
 TD travel mm: 5.40...6.20
 mm: (5.10...6.50)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 800
 TD travel mm: 3.90...4.30
 mm: (3.40...4.80)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 Charge press hPa: 800
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 2.70...3.30

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 4.80...5.40

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 6.00...6.60

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm3/10s: (26.70...98.40)
 2nd speed 1/min: 1800
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 6,5
 Shutoff

electromagnet Volt: 12
 Del. quantity cm3/: 50.50...51.50
 1000S.: (48.70...53.30)

2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 5,50...14,50
 1000S.: -

3rd speed 1/min: 2050
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: -

5th speed 1/min: 1900
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 37.00...43.00
 1000S.: (36.00...44.00)

8th speed 1/min: 1950
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 23.00...31.00
 1000S.: (22.00...32.00)

9th speed 1/min: 1800
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 51.50...54.50
 1000S.: (51.20...55.80)

12th speed 1/min: 1400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quyntity cm3/: 58.50...59.50
 1000S.: (56.70...61.30)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.00...45.00
1000S.: (42.20...46.80)

20th speed 1/min: 700
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.00...61.00
1000S.: -

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1800
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...18.00
1000S.: (12.00...20.00)
Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)
3rd speed 1/min: 350
Del. quantity cm³/: 26.50...33.50
1000S.: (26.00...34.00)

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1400
Charge press. hPa: 800
Inj.-qty. cm³/ : 5.00...7.00 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):

M15

1st speed 1/min: 1400
Charge press. hPa: 800
Supply pump-
pressure : 0.10...0.30 "
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...92.00
1000S.: (42.00...92.00)

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...42.00
1000S.: (18.00...42.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...92.00
1000S.: (42.00...92.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5,6...6,0
MS mm: 0,6...1,0
SVS max. mm: 1,7
LDA stroke mm: 6,5
XK mm: 20,0...22,0
XL mm: 10,1...13,5

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 3,4 B
Edition : 28.04.94
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE6/10F1400R209-1
Type number : 0 460 406 052
Customer Part-No. :

Customer-specific information
Customer : ONAN

Engine : L634T-Auto

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from 8DC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1.0
mm: $\pm 0.04(0.06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 4.30...4.70

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 800
Setting value bar: 3 80...4.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 800
Del. quantity cm³/
1000S.: 61.00...62.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 44.50...45.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 14.00...18.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1480
Charge press hPa: 800
Del. quantity cm³/
1000S.: 42.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 42.00...92.00
mind 1000S.: 42.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
 Charge press hPa: 800
 Inj.-qty. cm³/
 difference 1000S.: 8.50...16.50 *
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1100
 Charge press hPa: 800
 TD-travel
 difference mm: 0.50...0.70 *
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1400
 Charge press hPa: 800
 TD travel mm: 4.30...4.70
 mm: (3.80...5.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 Charge press hPa: 800
 TD travel mm: 1.40...2.20
 mm: (1.10...2.50)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1100
 Charge press. hPa: 800
 TD travel mm: 2.70...3.30
 mm: (2.30...3.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 2.30...2.90

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 3.80...4.40

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 4.80...5.40
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 200
 LDA-stroke mm: 6,5
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 47.00...48.00
 1000S.: (45.20...49.80)

2nd speed 1/min: 1560
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 14.00...22.00
 1000S.: -

3rd speed 1/min: 1600
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0,00...3.00
 1000S.: -

5th speed 1/min: 1480
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...46.00
 1000S.: (40.00...48.00)

9th speed 1/min: 1400
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 56.50...59.50
 1000S.: (55.70...60.30)

12th speed 1/min: 1100
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quynity cm³/: 61.00...62.00
 1000S.: (59,20...63.80)

18th speed 1/min: 700
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 44.50...45.50
1000S.: (42.70...47.30)
20th speed 1/min: 700
Charge press. hPa: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.50...60,50
1000S.: -

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...18.00
1000S.: (12.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

3rd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.50...33.50
1000S.: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1100
Charge press. hPa: 800
Inj.-qty. cm³/: 5.00...7.00 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1100

Charge press. hPa: 800
Supply pump-
pressure : 0.10...0.30 "
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...92.00
1000S.: -

2nd speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...42.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...92.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.6...6,0
MS mm: 0,6...1,0
SVS max. mm: 1,7
LDA stroke mm: 6,5
XK mm: 20,0...22,0
XL mm: 8,9...12,3

Remarks:

:
:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 E
Edition : 28.04.94
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE6/10F1800R209-5
Type number : 0 460 406 065
Customer Part-No. :

Customer-specific information
Customer : ONAN

Engine : L634T

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 0.98
mm: +0.04(0.06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 3.90...4.30

M19

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 800
Setting value bar: 4.80...5.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1400
Charge press. hPa: 800
Del. quantity cm³/
1000s.: 58.50...59.50

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000s.: 44.00...45.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000s.: 14.00...18.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 1900
Charge press hPa: 800
Del. quantity cm³/
1000s.: 37.00...43.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 42.00...92.00
mind 1000s.: 42.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1400
Charge press hPa: 800

Inj.-qty. cm³/
 difference 1000S.: 9.50...17.50 *
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1400
 Charge press hPa: 800
 TD-travel
 difference mm: 0.50...0.70 *
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
 Charge press hPa: 800
 TD travel mm: 5.40...6.20
 mm: (5.10...6.50)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 800
 TD travel mm: 3.90...4.30
 mm: (3.40...4.80)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 800
 Charge press hPa: 800
 TD travel mm: 1.00...1.80
 mm: (0.70...2.10)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 2.70...3.30
 bar: -

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 4.80...5.40
 bar: -

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1800
 Charge press. hPa: 800
 Supply-pump
 pressure bar: 6.00...6.60
 bar: -

Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1800
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 300
 LDA-stroke mm: 6.2
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.50...51.50
 1000S.: (48.70...53.30)

2nd speed 1/min: 2000
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 5,50...14,50
 1000S.: -

3rd speed 1/min: 2050
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

5th speed 1/min: 1900
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 37.00...43.00
 1000S.: (36.00...44.00)

8th speed 1/min: 1950
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 23.00...31.00
 1000S.: (22.00...32.00)

9th speed 1/min: 1800
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.50...54.50
 1000S.: (50.70...55.30)

12th speed 1/min: 1400
 Charge press. hPa: 800

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 58.50...59.50
 1000S.: (56,70...61.30)
 18th speed 1/min: 700
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.00...45.00
 1000S.: (42.20...46.80)
 20th speed 1/min: 700
 Charge press. hPa: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 57.50...60,50
 1000S.: -

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1800
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 14.00...18.00
 1000S.: (12.00...20.00)

Dispersion cm³/: 3.0
 1000S.: (3.0)

2nd speed 1/min: 450

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...6.00
 1000S.: -

3rd speed 1/min: 350
 Del. quantity cm³/: 26.50...33.50
 1000S.: (26.00...34.00)

Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1400
 Charge press. hPa: 800
 Inj.-qty. cm³/: 5.00...7.00 "
 difference 1000S.: -

Shutoff
 electromagnet Volt: 12

SP press.-dif.measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1400
 Charge press. hPa: 800
 Supply pump-
 pressure : 0.10...0.30 "
 difference bar: -
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 220
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...92.00
 1000S.: -

2nd speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 18.00...42.00
 1000S.: -

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.00...92.00
 1000S.: -

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: 5,6...6,0
 MS mm: 0,6...1,0
 SVS max. mm: 1,7
 LDA stroke mm: 6.2

Remarks:

:
 Operate control lever after each
 manifold-pressure compensator pressure
 change.

* Correction at adjusting nut

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 4,0 H
Edition : 03.05.94
replaces : 18.02.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F1100R94-1
Type number : 0 460 414 011
Customer Part-No. :

Customer-specific information
Customer : STEYR

Engine : WD411.89/90

Power KW: 52
Speed 1/min: 1100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 5.20...5.60

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.20...5.80

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 73.5...74.5
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 11.50...15.50
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1150
Del. quantity cm3/
1000S.: 50.00...56.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
mind 1000S.: 70.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
TD travel mm: 5.90...6.70
mm: (5.60...7.00)
3rd speed 1/min: 1000
TD travel mm: 5.20...5.60
mm: (4.70...6.10)
4th speed 1/min: 500
TD travel mm: 0.90...1.50
mm: (0.50...1.90)

Supply-pump pressure characteristic:

1st speed 1/min: 1100
Supply-pump
pressure bar: 5.70...6.30
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5.20...5.80
3rd speed 1/min: 500
Supply-pump
pressure bar: 2.80...3.40

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1080
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1270
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
4th speed 1/min: 1170
Del. quantity cm3/: 10.00...56.00
1000S.: (10.00...56.00)
5th speed 1/min: 1150
Del. quantity cm3/: 50.00...56.00
1000S.: (47.00...59.00)
9th speed 1/min: 1080
Del. quantity cm3/: 72.00...75.00
1000S.: (71.00...76.00)
12th speed 1/min: 1000
Del. quantity cm3/: 73.50...74.50
1000S.: (71.70...76.30)
20th speed 1/min: 500
Del. quantity cm3/: 70.00...73.00
1000S.: (68.50...74.50)

Mech. shutoff:
Mech. Abst. ellung:

1st speed 1/min: 1080
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm3/: 11.50...15.50
1000S.: (9.50...17.50)
Dispersion cm3/: 3.5
1000S.: (3.5)
2nd speed 1/min: 340
Del. quantity cm3/: 2.00...8.00
1000S.: (1.00...9.00)
3rd speed 1/min: 400
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm3/: 70.00...120.00
1000S.: -

2nd speed 1/min: 300
Del. quantity cm3/: 40.00...70.00
1000S.: -

4th speed 1/min: 100
Del. quantity cm3/: 70.00...120.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,1...5,5
MS mm: 0,8...1,2
SVS max. mm: 1,9
Ya mm: 37.2...39.2
Yb mm: 52.4...57.4

Remarks:

:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 28.04.94
replaces : 03.07.92
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R350
Type number : 0 460 414 070
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.27.2780

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2.20...2.60

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 55.00...56.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 16.50...17.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm3/
1000S.: 10.00...14.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 19.50...25.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1300
 Charge press hPa: 1000
 Inj.-qty. cm³/
 difference 1000s.: 22.00...30.00'
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 TD-travel
 difference mm: 1.90...2.10'
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1300
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: 0.10...0.30*
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
 Charge press hPa: 1000
 TD travel mm: 7.10...7.90
 mm: (6.80...8.20)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 2.20...2.60
 mm: (1.70...3.10)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 0.60...1.40
 mm: (0.30...1.70)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 3.60...4.20
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 5.60...6.20

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 7.60...8.20
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (41.70...83.40)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
 Charge-air pressure-setting
 point hPa: 400
 LDA-stroke mm: 6.5*
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 42.50...43.50
 1000s.: (39.00...47.00)

2nd speed 1/min: 2350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...5.00
 1000s.: (0.00...5.00)

5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 19.50...25.50
 1000s.: (18.00...27.00)

8th speed 1/min: 2000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...48.00
 1000s.: (38.00...50.00)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 51.00...56.00
 1000s.: (50.00...57.00)

12th speed 1/min: 1750
 Charge press. hPa: 1000

Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 55.00...56.00
 1000S.: (52.00...59.00)
 15th speed 1/min: 1500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 52.50...57.50
 1000S.: (51.00...59.00)
 17th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet volt: 12
 Del. quantity cm3/: 49.50...54.50
 1000H.: (48.00...56.00)
 18th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 16.50...17.50
 1000S.: (13.50...20.50)
 20th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 47.00...56.00
 1000S.: (46.00...57.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 10.00...14.00
 1000S.: (8.00...16.00)
 Dispersion cm3/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...5.00
 1000S.: (0.00...5.00)
 5th speed 1/min: 250
 Del. quantity cm3/: 33.00...43.00
 1000S.: (32.00...44.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

2nd speed 1/min: 1300
 Charge press. hPa: 1000

Inj.-qty. cm3/: 18.00...20.00*
 difference 1000S.: (18.00...20.00)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1300
 Charge press. hPa: 1000
 Inj.-qty. cm3/: 22.00...30.00'
 difference 1000S.: (22.00...30.00)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1300
 Charge press. hPa: 1000
 Inj.-qty. cm3/: 2.00...8.00#
 difference 1000S.: (2.00...8.00)
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 TD-travel : 1.90...2.10'
 difference mm: (1.90...2.10)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1300
 Charge press. hPa: 1000
 TD-travel : 2.00...2.80#
 difference mm: (2.00...2.80)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Supply pump-
 pressure : 0.10...0.30*
 difference bar: (0.10...0.30)
 Shutoff
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 6.10...7.10
 1000S.: (3.10...10.10)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 50.00...80.00
 1000S.: (50.00...80.00)

2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 20.00...50.00
1000s.: (20.00...50.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00
1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: K-OT

MS mm: 0.6...1.0

SVS max. mm: 0.8

LDA stroke mm: 6.5

Ya mm: 32.0...36.0

Yb mm: 42.9...47.1

Ajustement Potentiometer:

Angle for

pot. °: 25

Supply voltage

pot. volt: 5.0

Output volt

pot. volt: 1.0

Operate control lever after each
manifold-pressure compensator pressure
change. :

* Correction at adjusting nut

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
Lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
Lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R431-2
Type number : 0 460 414 088
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.78
mm: 0.73...0.83

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 5.60....6.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Charge press. hPa: HBA
Del. quantity cm3/
1000S.: 30.5...31.5 "VF"
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 35.5...36.5 "E"
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 16.00...20.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2100
Del. quantity cm3/
1000S.: 30.50...34.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 62.00...102.00
mind 1000S.: 62.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1950
TD travel mm: 5.80...6.60
mm: (5.50 ..6.90)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.50...2.90
mm: (2.20...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3.10...3.70

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000

Supply-pump
pressure bar: 4.80...5.40
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1250

Supply-pump
pressure bar: 5.60...6.20
Shutoff

electromagnet Volt: 12
4th speed 1/min: 1950

Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff

electromagnet Volt: 12
Overflow : 97.30...141.70
quantity cm³/10s: (82.30...156.70)

2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.30...184.80
quantity cm³/10s: (130.30...199.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400

NO1

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: ...10.0
1000S.: -

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...26.00
1000S.: (16.00...28.00)

8th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.50...36.50
1000S.: (27.50...39.50)

9th speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.7...41.3 "D"
1000S.: (37.0...42.0)

10th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 38.70...42.30
1000S.: (38.00...43.00)

11th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.5...36.5 "E"
1000S.: (33.5...38.5)

12th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.5...31.5 "F"
1000S.: (28.0...34.0)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 16.00...20.0
1000S.: (14.00...22.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 5.00...13.00
1000S.: (3.00...15.00)

Automatic starting fuel delivery:

1st speed 1/min: 300

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 30.00...60.00
1000S.: (30.00...60.00)

2nd speed 1/min: 480

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 24.00...34.00
1000S.: (24.00...34.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 62.00...102.00
1000S.: (62.00...102.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: KOT

MS mm: 1.3...1.7

SVS max. mm: 1.7

Ya mm: 42.8...45.8

Yb mm: 55.7...67.7

Remarks:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

XK = 15.65...17.65 mm

XL = 10.90...14.30 mm

(For installation of part-load

governor 1 463 161 798 and engine-
speed control lever 1 461 901 442).

Pump/engine assignment:

Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".

Attach timing-device cover

KDEP 1151.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 04.05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R415-3
Type number : 0 460 414 107
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5 DI MARINE

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.31
mm: 0.26...0.36

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 4.80...5.00
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.30...6.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Charge press. hPa: HBA
Del. quantity cm3/
1000S.: 41.1...41.5 "F"

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 43.60...44.60

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 10.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 24.30...26.30

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 65.00...105.00
mind 1000S.: 65.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 7.70...8.50
mm: (7.40...8.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 4.80...5.00
mm: (4.40...5.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 2.20...3.00
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump pressure bar: 8.00...8.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump pressure bar: 6.30...6.90

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Supply-pump pressure bar: 5.80...6.40

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Supply-pump pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 97.20...113.80
(82.20...128.80)

2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 115.20...184.70
(100.20...199.70)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400
Shutoff
electromagnet Volt: 12

NO4

Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.30...26.30
1000S.: (20.30...30.30)

6th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.6...40.6
1000S.: (31.6...43.6)

7th speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.2...46.6 "D"
1000S.: (42.9...47.9)

8th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.80...48.20
1000S.: (44.50...49.50)

9th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.6...45.6 "E"
1000S.: (41.60...46.60)

10th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 41.1...41.5 "F"
1000S.: (38.3...44.3)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...12.00
1000S.: (7.00...15.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...10.1
1000S.: -

Part-load del. at 3rd inj.-qty.
terza fermo della portata

stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 20.0

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.7...11.7
1000S.: (8.70...13.70)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 66.00...96.00
1000S.: (66.00...96.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...46.00
1000S.: (36.00...46.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: KOT
MS mm: 1.6...2.0
Ya mm: 42.8...45.8
Yb mm: 63.0...76.0

Remarks:
: FB = KDEP 1151
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control

Lever on distributor-head end

F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 04.05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R567
Type number : 0 460 414 108
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5 DI

Power KW: 57

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.52
mm: 0.47...0.57
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.60...2.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 6.90...7.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Charge press. nPa: HBA
Del. quantity cm3/
1000S.: 25.3...25.7 "F"
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 33.5...34.5 "E"
Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 6.00...8.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 22.00...24.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 26.00...66.00
mind 1000S.: 26.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 4.90...5.70
mm: (4.60...6.00)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.60...2.80
mm: (2.20...3.20)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump
pressure bar: 8.60...9.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Supply-pump
pressure bar: 6.40...7.10

Shutoff
electromagnet Volt: 12
4th speed 1/min: 500
Supply-pump
pressure bar: 5.20...5.80

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.20...113.80
quantity cm³/10s: (82.20...128.80)

2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.20...184.70
quantity cm³/10s: (100.20...199.70)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2400

N07

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...24.00
1000S.: (18.00...28.00)

6th speed 1/min: 2140
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.5...32.5
1000S.: (23.5...35.5)

7th speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.8...38.2 "D"
1000S.: (34.5...39.5)

8th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.30...38.70
1000S.: (35.00...40.00)

9th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.5...34.5 "E"
1000S.: (31.50...36.50)

10th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.3...25.7 "F"
1000S.: (22.5...28.5)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...8.00
1000S.: (3.00...11.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.0
1000S.: -

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 20.0

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 20.8...21.8
1000S.: (18.80...23.80)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...56.00
1000S.: (26.00...56.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.00...29.00
1000S.: (19.00...29.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.00...66.00
1000S.: (26.00...66.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: KOT
MS mm: 1.6...2.0
Ya mm: 42.8...45.8
Yb mm: 59.5...71.5

Remarks:

: FB = KDEP 1151
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed

position

Measurement point = edge of control
lever on distributor-head end

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 04.05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F2000R573
Type number : 0 460 414 109
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM "DI"

Engine : 8140.07.3700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1600
Setting value mm: 3.20...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 6.0...6.6
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000S.: 47.50...48.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 10.50...14.50
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 28.00...32.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 3.40...4.00
mm: (3.00...4.40)
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1600
TD travel mm: 3.20...3.40
mm: (2.60...4.00)
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200

TD travel mm: 0.20...0.80
mm: (0.00...1.20)

Shutoff
electromagnet Volt: 12

5th speed 1/min: 2000

TD travel mm: 4.20...4.80
mm: (3.80...5.20)

Shutoff
electromagnet Volt: 12

9th speed 1/min: 500

TD travel mm: 1.80...3.20
mm: (1.50...3.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500

Supply-pump pressure bar: 4.00...4.60

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1100

Supply-pump pressure bar: 6.00...6.60

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2000

Supply-pump pressure bar: 8.40...9.00

Shutoff
electromagnet Volt: 12

4th speed 1/min: 500

Supply-pump pressure bar: 7.00...8.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500

Shutoff
electromagnet Volt: 12
Overflow : 88.90...133.40
quantity cm³/10s: (73.90...148.40)

2nd speed 1/min: 2000

Shutoff
electromagnet Volt: 12
Overflow : 83.40...194.60
quantity cm³/10s: (68.40...209.60)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2350

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2200

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...32.00
1000S.: (25.50...34.50)

8th speed 1/min: 2150

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...42.00
1000S.: (32.00...44.00)

9th speed 1/min: 2000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.50...49.50
1000S.: (43.50...50.50)

10th speed 1/min: 1500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.00...52.00
1000S.: (46.00...53.00)

12th speed 1/min: 500

Shutoff
electromagnet Volt: 12
Del. quynity cm³/: 32.50...33.50
1000S.: (29.50...36.50)

18th speed 1/min: 1100

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 47.50...48.50
1000S.: (44.50...51.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.50...14.50
1000S.: (8.50...16.50)

Dispersion cm³/: 3.0
1000S.: (6.5)

2nd speed 1/min: 450

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 325

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 19.00...29.00
1000S.: (18.00...30.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...95.00
1000S.: (55.00...95.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...40.00
1000S.: (10.00...40.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.4...3.6
KF mm: KOT
MS mm: 1.0...1.4
Ya mm: 36.9...41.9
Yb mm: 44.4...49.6

Remarks:

:
Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

Starting delivery check
V = Speed-control lever in full-load
position

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 05.05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R522-1
Type number : J 460 414 110
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM "DI"

Engine : 8142.27.3800

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1200
Setting value mm: 2.90...3.10

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1200
Setting value bar: 6.60...7.20

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
1000S.: 50.50...51.50
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 26.00...27.00

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 8.00...12.00
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1200
Del. quantity cm3/
1000S.: 33.00...37.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind 1000S.: 40.00

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1400
Charge press hPa: 1200
Inj.-qty. cm3/
difference 1000S.: -18.0...-26.0 "
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1400
Charge press hPa: 1200
TD-travel
difference mm: -0.7...-0.9 "

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1200
 TD travel mm: 5.30...5.90
 mm: (4.90...6.30)
 3rd speed 1/min: 1400
 Charge press hPa: 1200
 TD travel mm: 2.90...3.10
 mm: (2.30...3.70)
 4th speed 1/min: 1250
 Charge press hPa: 1200
 TD travel mm: 1.60...2.20
 mm: (1.20...2.60)
 5th speed 1/min: 1900
 Charge press. hPa: 1200
 TD travel mm: 5.30...5.90
 mm: (4.90...6.30)

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Charge press. hPa: 1200
 Supply-pump pressure bar: 3.80...4.40
 2nd speed 1/min: 1400
 Charge press. hPa: 1200
 Supply-pump pressure bar: 6.60...7.20
 3rd speed 1/min: 1900
 Charge press. hPa: 1200
 Supply-pump pressure bar: 8.70...9.30

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1200
 Overflow : 75.00...119.50
 quantity cm3/10s: (60.00...124.50)
 2nd speed 1/min: 1900
 Charge press. hPa: 1200
 Overflow : 97.30...180.70
 quantity cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting point hPa: 600
 LDA-stroke mm: 6.2
 Del. quantity cm3/: 45.50...46.50
 1000S.: (42.00...50.00)
 2nd speed 1/min: 2300
 Charge press. hPa: 1200
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)
 5th speed 1/min: 2100
 Charge press. hPa: 1200
 Del. quantity cm3/: 33.00...37.00
 1000S.: (30.50...39.50)

8th speed 1/min: 2000
 Charge press. hPa: 1200
 Del. quantity cm3/: 43.00...51.00
 1000S.: (41.00...53.00)
 9th speed 1/min: 1900
 Charge press. hPa: 1200
 Del. quantity cm3/: 48.50...53.50
 1000S.: (47.50...54.50)
 12th speed 1/min: 1750
 Charge press. hPa: 1200
 Del. quantity cm3/: 50.50...51.50
 1000S.: (47.50...54.50)
 15th speed 1/min: 1000
 Charge press. hPa: 1200
 Del. quantity cm3/: 45.00...50.00
 1000S.: (43.50...51.50)
 16th speed 1/min: 800
 Charge press. hPa: -
 Del. quantity cm3/: 26.50...31.50
 1000H.: (25.50...32.50)
 18th speed 1/min: 550
 Charge press. hPa: -
 Del. quantity cm3/: 26.00...27.00
 1000S.: (23.00...30.00)
 20th speed 1/min: 800
 Charge press. hPa: 1200
 Del. quantity cm3/: 45.50...54.50
 1000S.: (44.50...55.50)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 1900
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
 Del. quantity cm3/: 8.00...12.00
 1000S.: (6.00...14.00)
 Dispersion cm3/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 425
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1st speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm3/ : -19.0...-21.0#
 difference 1000S.: -
 2nd speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm3/: 0.0...3.0 '2
 difference 1000S.: -

TD-travel dif.measurement:

correttore anticipo iniezione (SV):
1st speed 1/min: 1400
Charge press. hPa: 1200
TD-travel : -1.0...-1.8 '
difference mm: -

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1400
Charge press. hPa: 1200
Supply pump-
pressure : -0.1...-0.3 #
difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 500
Del. quantity cm³/: 14.00...30.00
1000S.: (14.00...30.00)

4th speed 1/min: 100
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

Mounting and assembly dimensions:

Designation

K	mm: VK
KF	mm: KOT
MS1	mm: 1.3...1.6
LDA stroke	mm: 6.2
Ya	mm: 37.9...39.9
Yb	mm: 44.3...50.1

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

Z = Absolute delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 05.94
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R521-1
Type number : 0 460 414 112
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.27.2560

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1200
Setting value mm: 2.60...2.80

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1200
Setting value bar: 7.20...7.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
1000S.: 47.50...48.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 26.00...27.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1200
Del. quantity cm3/
1000S.: 33.00...37.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...90.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1400
 Charge press hPa: 1200
 Inj.-qty. cm3/
 difference 1000S.: -21.0...-27.0 #
 Shutoff
 electromagnet Volt: 12
 TD-travel dif.measurement
 correttore anticipo iniezione (SV)
 1.Speed 1/min: 1400
 Charge press hPa: 1200
 TD-travel
 difference mm: -0.7...-0.9 #
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
 Charge press hPa: 1200
 TD travel mm: 4.70...5.30
 mm: (4.30...5.70)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 1200
 TD travel mm: 2.60...2.80
 mm: (2.00...3.40)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1250
 Charge press hPa: 1200
 TD travel mm: 1.30...1.90
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1900
 Charge press. hPa: 1200
 TD travel mm: 5.30...5.90
 mm: (4.90...6.30)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 5.30...5.90

Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 7.20...7.80

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900

Charge press. hPa: 1200
 Supply-pump
 pressure bar: 8.70...9.30
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.00
 quantity cm3/10s: (60.00...134.00)

2nd speed 1/min: 1900
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.00...180.00
 quantity cm3/10s: (82.00...195.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
 Charge-air pressure-setting
 point hPa: 450
 LDA-stroke mm: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 41.00...42.00
 1000S.: (38.00...45.00)

2nd speed 1/min: 2300
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000S.: (0.00...3.00)

5th speed 1/min: 2100
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 33.00...37.00
 1000S.: (30.50...39.50)

8th speed 1/min: 2000
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 41.00...49.00
 1000S.: (39.00...51.00)

9th speed 1/min: 1900
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 45.50...50.50
 1000S.: (44.50...51.50)

12th speed 1/min: 1750
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 47.50...48.50
 1000S.: (44.50...51.50)
 15th speed 1/min: 1000
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.50...49.50
 1000S.: (43.00...51.00)
 16th speed 1/min: 800
 Charge press. hPa: -
 Shutoff
 electromagnet volt: 12
 Del. quantity cm³/: 26.00...31.00
 1000H.: (25.00...32.00)
 18th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 26.00...27.00
 1000S.: (23.00...30.00)
 20th speed 1/min: 800
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.50...53.50
 1000S.: (43.50...54.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 300
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...12.00
 1000S.: (6.00...14.00)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Load-dependent start of delivery:
 Inj.-qty. dif. measurement:

1st speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm³/: -21.0...-23.0"
 difference 1000S.: (-21.0...-23.0)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm³/: -21.0...-27.0#
 difference 1000S.: (-20.0...-28.0)
 Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm³/: 0.00...3.00'Z
 difference 1000S.: (0.00...3.00)
 Shutoff
 electromagnet Volt: 12

TD-travel dif. measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1400
 Charge press. hPa: 1200
 TD-travel : -0.7...-0.9 #
 difference mm: (-0.70...-0.90)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press. hPa: 1200
 TD-travel : -1.0...-1.8 '
 difference mm: (-1.00...-1.80)
 Shutoff
 electromagnet Volt: 12

SP press.-dif. measurement:
 pompa di mandata (FP):
 1st speed 1/min: 1400
 Charge press. hPa: 1200
 Supply pump-
 pressure : -0.1...-0.3 "
 difference bar: -
 Shutoff
 electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.00...105.00
 1000S.: (55.00...105.00)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 14.00...30.00
 1000S.: (14.00...30.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...90.00
 1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K1
MS	mm: -
MS1	mm: 1.29-1.54
SVS max.	mm: -
XK	mm: 20.0...22.0
XL	mm: 15.0...18.4
Ya	mm: 37.9...39.9
Yb	mm: 44.9...50.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Z = Absolute delivery

Pump with slave plunger

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C

:35...40

Dwell speed, 1/min

:1100

Feedback voltage, mV

:-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min

:<500

Temperature stabilisation

speed 1/min

:2100

Output temperature, °C

:51

Measurement temperature, °C:49

Test speed, 1/min

:500...799

Temperature stabilisation

speed 1/min

:2100

Output temperature, °C

:48

Measurement temperature, °C:46

Test speed, 1/min

:800...1199

Temperature stabilisation

speed 1/min

:2100/100

Output temperature, °C

:45

Measurement temperature, °C:45

Test speed, 1/min

:1200...1700

Temperature stabilisation

speed 1/min

:100

Output temperature, °C

:42

Measurement temperature, °C:44

Test speed, 1/min

: 1700

Temperature stabilisation

speed 1/min

:100

Output temperature, °C

:41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR
Edition : 05.05.94
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/11F2000R567-1
Type number : 0 460 414 113
Customer Part-No. :

Customer-specific information
Customer : FORD

Engine : 2.5L DI (70 PS)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 114

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Start of delivery block
Piston stroke mm: 0.43
mm: $\pm 0.04(0.06)$

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.40...2.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1150
Setting value bar: 7.10...7.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 28.3...28.7 "F"

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1150
Del. quantity cm3/
1000S.: 35.0...36.0 "E"

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 6.00...8.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 33.00...35.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (4.0)

Start:

Speed 1/min: 100
Del. quantity cm3/: 30.00...70.00
mind 1000S.: 30.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
TD travel mm: 5.60...6.40
mm: (5.30...6.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.40...2.60
mm: (2.00...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 900
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 5.40...6.00

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1150
Supply-pump pressure bar: 6.90...7.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Supply-pump pressure bar: 7.10...7.70

Shutoff
electromagnet Volt: 12
4th speed 1/min: 2000
Supply-pump pressure bar: 8.70...9.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 97.30...141.70
quantity cm³/10s: (82.30...156.70)
2nd speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Overflow : 115.30...184.80
quantity cm³/10s: (100.30...199.80)

Delive/y-quant. and breakaway char.:

2nd speed 1/min: 2400
Shutoff

N20

electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...24.00
1000S.: (15.00...27.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...35.00
1000S.: (29.00...39.00)

9th speed 1/min: 1950
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.3...45.7 "D"
1000S.: (42.00...47.00)

10th speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.30...42.70
1000S.: (39.00...44.00)

12th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.3...28.7 "F"
1000S.: (25.50...31.50)

18th speed 1/min: 1150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.0...36.0 "E"
1000S.: (33.00...38.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...8.00
1000S.: (3.00...11.00)

Dispersion cm³/: 3.0
1000S.: (4.0)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

Part-load del.at 3rd inj.-qty.

terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 20.0

1st speed 1/min: 1250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.00...23.00
1000S.: (20.00...25.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...60.00
1000S.: (30.00...60.00)

2nd speed 1/min: 480
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...35.00
1000S.: (25.00...35.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 2.7...2.9
KF mm: KOT
MS mm: 1.6...2.0
Ya mm: 41.0...44.0
Yb mm: 64.0...78.0

Remarks:

: FB: 0.43 MM
: KDEP 1151

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 05.05.94
replaces : 09.06.92
Calibrating oil : ISO-4113

Injection pump : VE5/11F1900L179
Type number : 0 460 415 007
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 592 HTJ/9 MARINE

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 4.90...5.30

Supply-pump pressure

Speed 1/min: 1500

N22

Charge press hPa: 1000
Setting value bar: 4.70...5.30

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 66.50...67.50
Dispersion cm3/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 41.50...42.50

Low-idle speed regulation

Speed 1/min: 420
Del. quantity cm3/
1000S.: 19.50...25.50
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2050
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 36.00...42.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 50.00...76.00
mind 1000S.: 50.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
Charge press hPa: 1000
TD travel mm: 7.10...7.90
mm: (6.70...8.30)
3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 4.90...5.30
mm: (4.30...5.90)
4th speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...2.30
mm: (1.10...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1900

Charge press. hPa: 1000
Supply-pump
pressure bar: 6.00...6.60
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30
3rd speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 1.70...2.30

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow : 41.70...86.10
quantity cm³/10s: (26.70...101.10)
2nd speed 1/min: 1900
Charge press. hPa: 1000
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700*
Charge-air pressure-setting
point hPa: 300
LDA-stroke mm: 4.5
Del. quantity cm³/: 51.00...52.00
1000S.: (49.00...54.00)
5th speed 1/min: 2060
Charge press. hPa: 1000
Del. quantity cm³/: 36.00...42.00
1000S.: (34.00...44.00)
9th speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/: 59.00...62.00
1000S.: (58.30...62.70)
12th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/: 66.50...67.50
1000S.: (65.00...69.00)
18th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/: 41.50...42.50
1000S.: (39.50...44.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 420

N23

Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 420
Del. quantity cm³/: 19.50...25.50
1000S.: (18.50...26.50)
Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 650
Del. quantity cm³/: 0.00...2.00
1000S.: (0.00...2.00)
3rd speed 1/min: 500
Del. quantity cm³/: 13.00...21.00
1000S.: (12.00...22.00)

Automatic starting fuel delivery:

1st speed 1/min: 280
Del. quantity cm³/: 50.00...76.00
1000S.: (50.00...76.00)

2nd speed 1/min: 380
Del. quantity cm³/: 29.00...55.00
1000S.: (29.00...55.00)

4th speed 1/min: 100
Del. quantity cm³/: 50.00...76.00
1000S.: (50.00...76.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.8...6.2
MS	mm: 0.6...1.0
SVS max.	mm: 3.5
LDA stroke	mm: 4.5
Ya	mm: 37.2...39.2
Yb	mm: 50.5...55.5

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

Y_a = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Y_b = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SNF
Edition : 05.05.94
replaces : 04.84
Calibrating oil : ISO-4113

Injection pump : VE6/11F1150R92
Type number : 0 460 416 020
Customer Part-No. :

Customer-specific information
Customer : SNF

Engine : WD 611.85

Power KW: 73

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 5.30...5.70

Supply-pump pressure

Speed 1/min: 1000

N25

Setting value bar: 6.20...6.80

Full-load del. w/out charge press.:

Speed 1/min: 800
Del. quantity cm³/
1000S.: 61.5...62.5
Dispersion cm³/
1000S.: (3,5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 14.00...18.00
Del. quantity cm³/
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 25.50...29.50

Start:

Speed 1/min: 100
mind 1000S.: 55.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1150
TD travel mm: 6.80...7.60
mm: (6.50...7.90)
3rd speed 1/min: 1000
TD travel mm: 5.30...5.70
mm: (4.80...6.20)
4th speed 1/min: 700
TD travel mm: 1.60...2.40
mm: (1.30...2.70)

Supply-pump pressure characteristic:

1st speed 1/min: 1150
Supply-pump
pressure bar: 7.00...7.60
2nd speed 1/min: 1000
Supply-pump
pressure bar: 6.20...6.80
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.40...4.00

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1100
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery quant. and breakaway char.:

2nd speed 1/min: 1300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1250
Del. quantity cm³/: 2.00...18.00
1000S.: (2.00...18.00)
5th speed 1/min: 1200
Del. quantity cm³/: 25.50...29.50
1000S.: (21.50...33.50)
9th speed 1/min: 1100
Del. quantity cm³/: 64.00...67.00
1000S.: (63.00...68.00)
12th speed 1/min: 800
Del. quantity cm³/: 61.50...62.50
1000S.: (59.70...64.30)
20th speed 1/min: 500
Del. quantity cm³/: 57.50...60.50
1000S.: (56.50...61.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1100
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 14.00...18.00
1000S.: (12.00...20.00)
Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 420
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 350
Del. quantity cm³/: 2.00...10.00
1000S.: (2.00...10.00)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm³/: 65.00...125.00
1000S.: (65.00...125.00)

2nd speed 1/min: 300
Del. quantity cm³/: 28.00...52.00
1000S.: (28.00...52.00)

4th speed 1/min: 100

N26

Del. quantity cm³/: 65.00...125.00
1000S.: (55.00...115.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.2...5.4
MS	mm: 1.3...1.5
SVS max.	mm: 6.0
Ya	mm: 37.2...39.2
Yb	mm: 46.2...54.8

Remarks:

:
Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end